THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

Telegrams—LANCET, WESTRAND LONDON. *Telephone*—GERRARD 4314 & 4315. *Offices*—423, Strand, London, W.C.

No. V. OF VOL. I., 1928. **No. 5449. Vol. CCXIV.** LONDON, SATURDAY, FEBRUARY 4, 1928 Founded 1823. Registered as a Newspaper. Published Weekly. **Pp. 128—Price 1s.** Annual Subscription, Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 2.

NOW READY. Crown 4to. Pp. x. + 108, with 143 Illustrations. Price 10s. 6d. net.: postage: inland 6d., abroad 8d.

THE SIMPLE GOITRES.

By ROBERT McCARRISON, C.I.E., M.D., D.Sc., LL.D., F.R.C.P.,

Lauréat de l'Académie de Médecine, Paris; Lieut.-Colonel, I.M.S.

Baillière, Tindall & Cox, 7 & 8, Henrietta-st., Covent Garden, W.C.2.

NINTH EDITION. Royal 8vo. Pp. xxii. + 536, with 6 Plates and 279 Illus. Price 25s., postage 9d.

PHYSICAL DIAGNOSIS.

By RICHARD C. CABOT, M.D., Prof. of Medicine, Harvard.

¶ "*The clear descriptions of procedures and the deductions to be drawn are very helpful.*"—BRIT. MED. JL.

Baillière, Tindall & Cox, 7 & 8, Henrietta-st., Covent Garden, W.C.2.

ON THE BREAST.

By DUNCAN C. L. FITZWILLIAMS, C.M.G., M.D., Ch.M., F.R.C.S. Ed. and Eng.

Royal 8vo. 456 pp. 2 Plates, 166 Illustrations. 30s. net.

LANCET.—"The book is packed with accurate clinical observations and bears evidence throughout of extensive clinical experience and wide reading on the part of the author."

Wm. Heinemann (Medical Books) Ltd., 99, Great Russell Street, London, W.C.1.

OPHTHALMIC SURGERY

including the Author's

OPERATION FOR IMMATURE CATARACT.

By V. NESFIELD, F.R.C.S. Eng., Major I.M.S. (retired), Ophthalmic Surgeon, The Queen's Hospital for Children. London, E.

Demy 8vo, with illustrations. 9s., postage 6d.

H. K. Lewis & Co. Ltd., 28 Gower Place, W.C. 1.

CANCER OF THE BREAST

AND ITS TREATMENT.

By W. SAMPSON HANDLEY, M.S., M.D. Lond., F.R.C.S. Eng.

Second Revised Edition. With 82 Illustrations. 30s. net.

Published for the Middlesex Hosp. Press by John Murray, London.

DISEASES OF THE RECTUM AND COLON

AND THEIR SURGICAL TREATMENT.

BY

P. LOCKHART-MUMMERY,

F.R.C.S.ENG., M.A., M.B., B.C.CANTAB.,

Senior Surgeon to St. Mark's Hospital.

Over Two Hundred Plates and Illustrations. Price 25s.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

J. & A. CHURCHILL'S NEW BOOKS.

TAYLOR'S MED. JURISPRUDENCE. 8th Ed. 2 Vols. Illus. 63s. By Prof. SYDNEY SMITH and W. G. H. COOK, LL.D.

BOLTON'S OILS, FATS, AND FATTY FOODS. Illustrated. 30s.

WHITBY'S MEDICAL BACTERIOLOGY. 75 Illus. 10s. 6d.

CAMERON'S TEXT-BOOK OF BIO-CHEMISTRY. 14 Illus. 15s.

HALE-WHITE'S MATERIA MEDICA. 19th Ed. 10s. 6d.

CLAYTON'S EMULSIONS AND THEIR TECHNICAL TREATMENT. 2nd Edition. Illustrated. 15s.

ROGERS' RECENT ADVANCES IN TROPICAL MEDICINE. 13 Illus. 12s. 6d.

EDEN AND LOCKYER'S GYNÆCOLOGY. 3rd Ed. 588 Illus. 36s.

PANTON & MARRACK'S CLINICAL PATHOLOGY. 2nd Ed. 63 Illus. 15s.

ROWLANDS AND TURNER'S OPERATIONS OF SURGERY. 2 Vols. 7th Ed. 900 Illus. 70s.

THE MEDICAL DIRECTORY, 1928. 53,000 Names. 30s.

London: J. & A. Churchill, 40, Gloucester-place, Portman-sq., W.1

RADIUM IN CANCER,

AND

THE SURGERY OF ACCESS.

A REVIEW OF MODERN OPERATIVE AND NON-OPERATIVE TECHNIQUES.

By

ARTHUR B. SMITH, M.B., F.R.C.S.E.,

SYDNEY M. SMITH, M.B., Ch.B.Ed.

A brief Illustrated Outline of Recent Advances in the Technique of Treatment of Cancer in General Surgery, Gynecology, Laryngology and Dermatology.

RECENTLY PUBLISHED.

With 18 Illustrations. 56 pages. Price 3s. 6d. net; postage 3d.

London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C. 1.

NOW READY IN THE STUDENT'S AIDS SERIES.

Pp. viii + 188, with 11 Illustrations Price 4s. 6d.; postage 3d.

AIDS TO BIOCHEMISTRY

By E. ASHLEY COOPER, D.Sc. (Lond.), F.I.C., A.R.C.S., AND S. D. NICHOLAS, B.A. (Oxon.) A.I.C., Lecturers in Chemistry, University of Birmingham.

"*Contains a great deal of matter in a small space—matter which is difficult to obtain except in large text-books.*"

—MIDDLESEX HOSP. JNL.

"*As a laboratory guide it can be recommended.*"

—ST. MARY'S H. GAZ.

Baillière, Tindall & Cox, 7 & 8, Henrietta Street, London, W.C.2.

NOW READY. 7/6 net.

THE TREATMENT OF

CHRONIC DEAFNESS.

BY THE ELECTROPHONÖLIC METHOD OF ZUND-BURGUET.

By GEORGE C. CATHCART, M.A., M.D.C.

Consulting Surgeon to the Throat Hospital, Golden Square.

Oxford University Press, Amen House, Warwick Square, E.C.4.

JUST ISSUED

Ewing's Neoplastic Diseases

NEW (3rd) EDITION

"*Professor Ewing has produced a book which will, we think, be recognised as the standard work of reference on this subject in the English language for many years to come. His knowledge of the Literature is immense, and he has drawn upon it freely, so that, although the book is based on his own experience, practically every page contains reference to the work of others. It is remarkable that such a stamp of individuality should have been retained in so broad and catholic a survey of the subject. . . . We cordially congratulate Professor Ewing on the success which has attended his labours.*"—THE LANCET (Review of Second Edition).

Neoplastic Diseases. By JAMES EWING, Sc.D., M.D., Professor of Pathology, Cornell University Medical School. Octavo of 1127 pages, with 546 illustrations. Cloth, **63s.** net.

W. B. Saunders Company, Ltd., 9, Henrietta Street, London, W.C. 2.

ZŌPLA STRAPPING IS ALWAYS READY FOR USE

It keeps without deterioration and is instantly self-adhesive.

It exerts a powerful grip and does not slip.

On various cloths and felts. WRITE FOR SAMPLES.

Manufacturers of the Original Holland Strapping.

LESLIES LTD., High St., WALTHAMSTOW, LONDON, E.17

Felsol *The New Internal Treatment* for ASTHMA

CONTAINS NO NARCOTICS

One of many Testimonials received from medical men:

I should be glad if you would forward a sample of "Felsol" to Dr. . . . of . . . as I have been telling him how successful it has been with an asthmatical patient of mine and I should like him to give it a trial . . . M.B.

Literature—Formula and Physician's Sample supplied on request by

BRITISH FELSOL COMPANY, LTD., 29, Red Lion Square, London, W.C. 1.

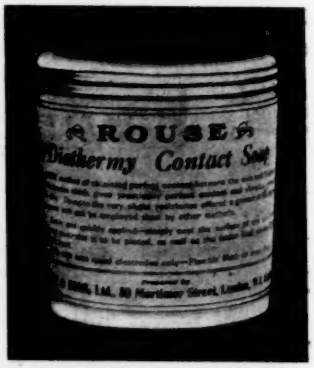
A Great Advance on all Previous Diathermy Apparatus.

Following upon the greatly improved type "A" machine, we have introduced a further model called the "Portotherm," an inexpensive yet practical Diathermy apparatus. We are firmly convinced that this new machine will meet all the requirements of the average medical practitioner. It is so simple that it can be mastered in five minutes; it is easily portable and requires absolutely no attention whatever. Output 1,000 milliamperes. A very smooth high-frequency current (Violet Ray) is also available from this machine. **Price £18 0 0**

You are cordially invited to visit our showroom and inspect this new model and other electro-medical apparatus. Catalogues & special leaflets gladly sent on request.

Diathermy Contact Soap

This is one of the innovations which we have introduced to simplify the application of Diathermy. This soap, which has been evolved only after considerable experimentation, can be relied upon to make perfect contact between the Diathermy electrode and the patient.



ROUSE & SONS, Ltd.
50, Mortimer Street, LONDON, W. 1.

Supplied in 1lb. jars Price **3/6** per jar.

THE LANCET

No. 5449. LONDON, SATURDAY, FEBRUARY 4, 1928. CCXIV.

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

AN ADDRESS on Some Problems in the Ætiology of Cardiac Failure. By Sir JOHN F. H. BROADBENT, M.D., F.R.C.P. 217

ORIGINAL ARTICLES.

Incidence of the Minor Psychoses. By MILLAIS CULPIN, M.D., F.R.C.S. . 220

Tumours of the Spinal Cord. By Prof. A. MILLS KENNEDY, M.D., and LAMBERT ROGERS, F.R.C.S. 225

Passive Immunisation against Scarlet Fever. By EDWARD JAMES, M.B., D.P.H. 227

Irradiated Ergosterol in the Treatment of Rickets. By R. AIDIN, M.D..... 229

CLINICAL AND LABORATORY NOTES.

Two Consecutive Abdominal Pregnancies. By MILLICENT V. WEBB, L.R.C.P. & S..... 230

Labour with Complete Occlusion of the External Os. By E. O. CROFT, M.D., and A. M. CLAYE, M.D..... 231

Treatment of Obesity by Ultra-violet Rays. By C. L. WILLIAMSON, M.R.C.S., and C. H. BROOMHEAD, M.D..... 231

MEDICAL SOCIETIES.

Medical Society for Study of V.D.: Antenatal Treatment of Syphilis.. 232

Tuberculosis Society..... 233

Medico-Legal Society: Drunkenness and Criminal Responsibility. 235

Cambridge Medical Society 236

Medico-Chirurgical Society of Edinburgh 236

Royal Academy of Medicine in Ireland 237

REVIEWS AND NOTICES OF BOOKS.

The Infancy of Medicine. By Dan McKenzie, M.D. 238

Pyorrhœa Alveolaris. By F. St. J. Steadman, M.R.C.S., L.D.S. 239

Lehrbuch und Atlas der Laparo- und Thorakoskopie. By Dr. Roger Korbsch 239

Dictionary of National Biography 239

Living Machinery. By Prof. A. V. Hill, M.A., F.R.S. 240

Le traitement des fractures du col du fémur. By Jacques Leveuf and Ch. Girode 240

Rassen-Forschung. Von Dr. Walter Scheidt 240

LEADING ARTICLES.

THE ALLEVIATION OF DEAFNESS 241

PSYCHONEUROSES AND INDUSTRY 242

HEALTH AT SCHOOL: THE DOCTOR AND THE TEACHER 242

JOHANNES FIBIGER 243

ANNOTATIONS.

Mental Disabilities and Premature Birth 244

Those Other Practitioners. 244

Tubercle Bacilli in Bovine Fæces 245

Backache 245

Diphtheria Carriers..... 245

Asthma and Affections of the Skin 246

The Employment of Tuberculous Patients 246

A Shocking Film 247

The Emperor Frederick's Fatal Illness..... 248

A Testimonial to Sir Dawson Williams 249

The Bundaberg Disaster .. 249

"Fright Disease" in Dogs 249

SPECIAL ARTICLES.

Our Hospital System. By Prof. E. W. HEY GROVES, F.R.C.S. 251

Occupation, Health, and Mortality: Reg.-Gen.'s Decennial Supplement .. 254

Medicine and the Law: Illegal Operation.—Pasteurised Milk 255

South Africa: Dengue in Durban 256

Berlin: Diabetes in Germany 257

Scotland: Edinburgh Health Week..... 257

MODERN TECHNIQUE IN TREATMENT.

CCLXI.—The Treatment of Impotence. By KENNETH M. WALKER, F.R.C.S. .. 250

PUBLIC HEALTH SERVICES.

Infectious Disease in England and Wales 258

Birmingham Tuberculosis Department 258

CORRESPONDENCE.

Treatment of the Malarias (Dr. Carmichael Low) .. 259

Three Conceptions of Tuberculosis (Dr. H. O. Blanford) 259

Damages to Bones and Reputations (Dr. R. T. Richmond) 160

Specificity of Anti-cancer Sera (Dr. T. Lumsden).. 260

Vitamin D Value of Cod-liver Oil (Mr. H. Jephcott).—*(Illustrated)* 261

Cancer of the Rectum (Mr. Lockhart-Mummery) ... 262

Commissions in the R.A.M.C. (Fleet-Surg. W. E. Home) 262

Aural Systemic Infection (Dr. J. Rupert Collins).. 263

Vitamin B and the Alimentary Canal (Dr. Samson Wright) 263

The Apparent Increase of Cancer (Dr. D. F. Shearer) 263

Gastro-Duodenal Ulceration (Drs. D. M. O'Connor and H. W. Nott) 264

The Future of Medical Practice (Dr. W. Benton) 264

Nomenclature (Dr. E. Ward) 264

OBITUARY.

Robert Arthur Milligan, M.D. 265

Claude William Scott Saberton, M.D. 265

James Clement Baxter, L.R.C.P..... 265

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Indian Medical Service.—Royal Air Force 265

MEDICAL NEWS.

Univ. of Oxford..... 266

Univ. of Cambridge 266

Roy. Coll. Phys. Lond..... 266

Society of Apothecaries .. 267

Univ. of London 267

Middlesex Hospital 224

Doncaster Royal Infirmary 238

Voluntary Hospitals and Public Authorities 251

Royal Medical Benevolent Fund 258

Fellowship of Med. and Post-Grad. Med. Assoc. . 267

Medical Faculty of Innsbruck 266

International Medical Congress for Industrial Accidents, &c. 267

Naval Medical Compassionate Fund 267

West Kent Medico-Chir. Soc. 267

Warneford Hospital, Leamington 267

Proposed Irish Pharmacy Bill 267

Hospital Needs in Salford.. 267

Dental Practice in Victoria (Australia) 267

A Cottage Hospital's Treasure 267

Birmingham Dental Hospital 267

Denbighshire Hospitals... 267

Royal National Orthopædic Hosp. 267

Extension of Leeds Maternity Hosp. 268

Immunisation against Diphtheria 268

Donations and Bequests .. 268

INDEX NOTICE.

THE LANCET, Vol. II., 1927 269

NOTES, COMMENTS, AND ABSTRACTS.

Villemin and the Elimination of Tubercle..... 270

The London Fever Hospital —*(Illustrated)* 270

Letters to Young Dog Owners 270

New Preparations: Introcid.—Dextrocid.—"Wellcome" Brand Schultz-Charlton Test Solution.—Cerevisiæ Compound 270

Medical Diary 268

Appointments 269

Vacancies 269

Births, Marriages, Deaths 269

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY LIMITED.

(FOUNDED 1892)

Registered Office: VICTORY HOUSE, LEICESTER SQUARE, W.C.2.

Telegrams: "MEDICAVERO, WESTRAND, LONDON." *Telephone:* REGENT 0611.

President: Sir JOHN ROSE BRADFORD, K.C.M.G., C.B., C.B.E., M.D., F.R.C.P., F.R.S.
Treasurer and Chairman of Council: C. M. FEGEN, M.R.C.S., L.R.C.P., D.P.H.
Trustees for the Reserve Fund:
Rt. Hon. LORD DAWSON, G.C.V.O., K.C.B., M.D., F.R.C.P. Sir ANTHONY A. BOWLBY, Bart., K.C.B., K.C.M.G., K.C.V.O., F.R.C.S. Sir HARRY BALDWIN, C.V.O., M.R.C.S., L.D.S.

The Society was founded for the following purposes: To protect, support, and safeguard the character and interests of legally qualified Medical and Dental Practitioners; to advise and assist Members of the Society in matters affecting their professional character and interests; and to indemnify them in regard to actions, etc., undertaken on their behalf.

SUBSCRIPTIONS. There is an Entrance Fee of 10s., and an Annual Subscription of £1.

The Invested Funds of the Society exceed £38,100. The Society is fully insured to an unlimited extent against all adverse costs and damages which may be awarded against Members in any action which the Society undertakes on their behalf.

Forms of application for Membership and full particulars may be obtained from the Secretaries at the above address.

OXFORD MEDICAL PUBLICATIONS

Telegrams: OXUNIPRES, CENT, LONDON.
Telephone: CITY 8960. Extension, Dept. R.

1927-28

THE SURGICAL TREATMENT OF MALIGNANT DISEASES

By Sir HOLBURT J. WARING, M.S., M.B., B.Sc.(Lond.), F.R.C.S.

Pp. 687. 277 Illus. 19 Col. Plates. 50s. net.

* * * * * * *

ABDOMINAL SURGERY OF CHILDREN

By L. E. BARRINGTON-WARD, Ch.M., F.R.C.S. (Edin.) F.R.C.S. (Eng.)

Pp. 300. 82 Illus. 3 Col. Plates. 15s. net.

* * * * * * *

DISEASES OF THE GUMS AND ORAL MUCOUS MEMBRANE

By Sir KENNETH GOADBY, K.B.E., M.R.C.S., L.R.C.P., D.P.H. (Cantab.)

New (3rd) Edition. Pp 428. 10 Col. Plates. 118 Figs. 3 Tables. 42s. net.

* * * * * * *

BACTERIOLOGY AND SURGERY OF CHRONIC ARTHRITIS AND RHEUMATISM

With End-Results of Treatment.

By H. WARREN CROWE, D.M., B.Ch.(Oxon.), M.R.C.S., L.R.C.P.

The Chapter on Surgical Treatment by HERBERT FRANKLING, C.B.E., M.R.C.S. (Eng.)

Pp. 197. 6 Col. Plates. 34 Illus. 4 Charts. 30s. net.

* * * * * * *

DIAGNOSIS AND TREATMENT IN DISEASES OF THE LUNGS

By FRANK E. TYLECOTE, M.D., D.P.H. (Vict.), F.R.C.P. (Lond.);
and GEORGE FLETCHER, M.A., M.D.(Glas.), M.R.C.P. (Lond.), D.P.H.(Camb.),

Pp. 270. 7s. 6d. net.

* * * * * * *

POST-MORTEM APPEARANCES

By J. M. ROSS, M.D., B.S. (Lond.), M.R.C.S., L.R.C.P.

With a Preface by E. H. KETTLE, M.D.

New (2nd) Edition. Pp. 234.

7s. 6d. net.

Catalogue Free ***Upon Application.***

The Oxford University Press

HUMPHREY MILFORD. Dept. R. (L.), Falcon Square, London, E.C.1

(And of all Booksellers).

An Address
ON
SOME PROBLEMS IN THE ÆTIOLOGY OF CARDIAC FAILURE.

Delivered before the Inter-State Post-Graduate Medical Association at Kansas City, U.S.A., on Oct. 17th, 1927,

BY SIR JOHN F. H. BROADBENT, BART.,
M.D. OXF., F.R.C.P. LOND.,
PHYSICIAN TO ST. MARY'S HOSPITAL.

HEART failure has been defined as the inability of the heart to discharge efficiently its function of circulating the blood, and the essential cause of heart failure is stated to be some damage to the heart muscle which impairs its efficiency as the propelling and regulating mechanism of the circulation. Though it is true that the functional capacity of the heart depends on the integrity of its musculature, it must also be borne in mind that its efficiency as a pump may be impaired by lesions of the valves and by disorders of rhythm.

In investigating the problems of the ætiology of heart failure all these factors have to be taken into consideration and their relative importance carefully weighed. We must also have in our minds some criterion as to what constitutes heart failure, what are the early symptoms of its onset, what agents are likely to bring it about, and whether it is likely to be a temporary or permanent condition.

All these points are important from the point of view of prognosis, and in heart disease the question of prognosis is of the utmost importance both to physician and patient. The latter will want to know the degree of seriousness of the heart affection, whether he is in danger of sudden death, and what are his prospects in regard to the future; the former will have to decide these points, state what amount of exercise can be taken with safety, and instruct his patient how he should regulate his life to his best possible advantage.

In deciding these important points many factors have to be taken into consideration—first of all, whether the patient has actual heart disease, or whether the symptoms he attributes to heart disease are due to other causes. If they are attributable to some affection of the heart, the physician must decide whether this is a temporary condition, the result of some recent acute illness or toxæmia, or loss of tone from overwork or neurasthenia; or, on the other hand, to organic disease of the heart, either of the valves or myocardium.

Speaking generally, we may classify affections of the heart in three main groups—diseases of the valves, of the myocardium, and disorders of rhythm—but no hard-and-fast line can be drawn, and the condition of the myocardium must always be taken into consideration, since it is the dominating factor in the functional efficiency of the heart. Taking these seriatim, I will deal with valvular disease first, and endeavour to show what part it may play in contributing to heart failure.

VALVULAR DISEASE.

As the result of the establishment of a valvular lesion of any degree of severity, certain changes take place in the walls and cavities of the heart, which represent an attempt on the part of Nature to counteract or compensate for the ill-effects of the lesion. These changes consist of hypertrophy of the walls of one or other of the ventricles, together with dilatation of some of the cavities of the heart, but however efficiently they are carried out as a counteracting measure, the mechanism of the heart as a pump must be seriously impaired and the hydraulics of the circulation in some degree upset.

For instance, in mitral stenosis we have a nozzle gradually decreasing in circumference as time goes on, damming back the circulation in the lungs, and incidentally giving rise to dilatation of the left auricle, with the result that an increasing amount of work is put on the right ventricle, which hypertrophies at first in response, but in the long run gives way under the prolonged and increasing strain. In aortic incompetence the left ventricle dilates and subsequently hypertrophies as a result of the reflux from the aorta, and carries on for a time, but eventually tends to give out from the prolonged effort under a serious mechanical disadvantage. The vascular system also adapts itself to meet the altered requirements of the circulation. Thus in mitral or aortic stenosis we find the vessels, taking the radial artery as an example, contracted down and smaller in calibre in proportion to the degree of stenosis, to adapt themselves to the diminished volume of blood propelled through the narrowed orifice. In aortic incompetence, on the other hand, when we have a dilated and hypertrophied left ventricle pumping an abnormal quantity of blood with increased force into the circulation, we find the arteries enlarged to accommodate the increased volume of blood, and the arterial system relaxed by vasomotor dilatation, so that the peripheral resistance is diminished and the work of the heart proportionately lessened.

From the degree in which these various changes manifest themselves, it is possible to form a fairly accurate estimate of the extent of the valvular lesion, and from the readiness with which symptoms of cardiac distress are induced by exertion one is able to judge as to the efficiency of these changes in compensating for the lesion. It is obvious that a valvular lesion when severe may be an important contributory factor to heart failure.

AFFECTIONS OF THE MYOCARDIUM.

Valvular lesions impair the mechanism of the heart as a pump, but the functional capacity and driving power of the heart, which is the more important consideration, is dependent on the integrity and soundness of the muscular walls, and though it is a comparatively easy matter to estimate the degree of severity of a valvular lesion, it is often very difficult to decide, with any degree of accuracy, as to the extent and nature of the damage in affections of the myocardium.

When essaying the latter task, we must bear in mind what are the essential characteristics of cardiac muscle. These were originally defined by Gaskell as: 1. Contractility. 2. Tonicity. 3. Conductivity. 4. Excitability—i.e., the power of responding to a stimulus, as a result of which contraction takes place. (In this connexion heart muscle has two peculiar properties: when stimulated it contracts to the full extent of its capacity; after contraction there is a refractory period during which it is incapable of responding to a further stimulus till a certain degree of energy has accumulated during diastole.) 5. Stimulus production, or the power of originating a rhythmical stimulus in response to which the heart contracts.

The last three properties are more particularly concerned in disorders of rhythm. The first two, contractility and tonicity, have more especially to be considered in discussing questions as to the functional capacity of the heart and the causes of heart failure. The efficient working of the heart is dependent on the integrity of these two important properties of the heart muscle, and damage to the myocardium may impair one or both of the functions with which they are concerned.

Before we discuss the causes of the impairment of the functional capacity of the heart, and of dilatation in particular, it is necessary to clear the ground by considering what are the effects of severe exertion on a healthy heart. In the well-trained athlete the heart responds to exertion by increased output and increased rate of beat. To supply the increased output it is possible that there is some physiological

increase in the capacity of the cavities of the heart during diastole, so that they accommodate an increased amount of blood. But the heart contracts more strongly, and, what is most important, completely empties itself of blood at each systole. In a short time after the cessation of exertion the pulse-rate settles down to normal. In the unfit or unhealthy individual, when the reserve power of the heart has been diminished by disease or other causes, undue exertion may lead to dilatation, with incomplete emptying of residual blood, and a very rapid pulse-rate which does not readily subside.

In the healthy young adult all the evidence tends to prove that the normal heart does not become dilated, however much its working capacity is taxed by exertion. This is borne out not only by the experience of athletes but by experimental evidence. Some years ago Dr. Balint Rezsoe,[1] of Budapest, carried out a series of experiments to demonstrate this. Healthy young porters were made to wrestle up to exhaustion, with absolutely negative results as regards dilatation. A dog was made to rotate a wheel until completely exhausted, till it finally dropped, but no increase in the size of the heart could be detected. A large number of patients were requested to do certain work up to the limits of their endurance, but no appreciable dilatation occurred. In all these experiments the results were confirmed by accurate measurement of the size of the heart before and after exertion by means of X rays.

The reserve power and functional efficiency of the healthy heart in the young adult thus appear to be almost unlimited. We have now to consider what are the causes which will impair this efficiency. First, I will refer to those which impair the tonicity of the heart muscle and thus bring about dilatation.

Tonicity.

Tonicity is the property which maintains the heart muscle in a state of "tone" or static contraction, so that it does not completely relax during diastole and allow the ventricle to become over-distended, and also keeps it, so to speak, tuned up, so that it is ready at once to contract effectively when the stimulus reaches it. Impairment of this function of tonicity is the main ætiological factor in dilatation of the heart. Dilatation implies the giving way of the walls of the heart, and ventricular dilatation, or the giving way and stretching of the wall of the ventricle is an important ætiological factor in heart failure in a large group of cases. In other words, heart muscle that has lost its tone may be compared to india-rubber or elastic which has more or less perished, so that it is less resilient and gives way under the pressure of the contained blood.

Causes of Impairment of Tonicity.

Bacterial toxins of all kinds impair to a varying degree the tonicity of the heart muscle, notably those of influenza, pneumonia, and typhoid fever, but the most deadly toxin is that met with in the rheumatic heart affections of children, and in rheumatic pericarditis I think all will agree we may see the most extreme degree of cardiac dilatation. The recuperative power of the heart in the young in such cases when failure results from dilatation is very remarkable, as instanced by the wonderful recoveries one sees from rheumatic pericarditis where the dilatation has been extreme. On the other hand, when the dilatation persists, the more especially if the pericardium becomes adherent, we have a fruitful cause of heart failure. The left ventricle hypertrophies to deal with the increased volume of blood it has to propel and with the hampering effects of the adhesions when they are present, and we have a greatly enlarged heart, with mitral incompetence probably present in addition as a result of the dilatation, struggling against almost insuperable obstacles, and however plucky the struggle, it cannot be many years before it breaks down.

In Graves's disease there is often marked dilatation of the heart. The cause of this is not altogether clear. The rapid action of the heart must tend to exhaust the cardiac muscle and this may be a contributory cause, but the cardiac dilatation is associated with marked loss of tone of the arterial system, as well as of the myocardium, for both of which it would appear that the excessive thyroid secretion must be responsible. The dilatation may be very great and subside with the recovery from the Graves's disease. I have notes of a case of a lady of 40 suffering from this affection, with great cardiac dilatation, the apex-beat being in the sixth space almost in the anterior axillary line with a loud blowing systolic murmur, and some œdema of the legs. On recovery from the Graves's disease some years later the mitral murmur had disappeared, the apex-beat had come in to the nipple line, and the heart had regained its normal size.

Chronic alcoholism may in course of time be responsible for cardiac dilatation with some degree of mitral incompetence from its deleterious effects on the heart muscle. Various debilitating influences, such as prolonged nervous strain, unhealthy surroundings, poor nutrition, neurasthenia, and over-work may impair the tonicity of the heart muscle and lead to some degree of dilatation. Degenerative disease of the myocardium, fibrosis, and fatty degeneration, the former often the result of cicatricial changes following severe rheumatic carditis, may be a cause of dilatation and heart failure. Syphilis also may damage the vessels or myocardium. In later life we come across some cases of heart failure associated with great dilatation in which no definite cause can be traced for the dilatation or breakdown except perhaps wear and tear.

Diagnosis of Dilatation.

The presence of dilatation may be ascertained by percussion in the majority of cases, especially in the young, but it is not always an easy matter to percuss out the exact outline of an organ situated behind a bony framework and overlapped to a varying degree by lung, and in adults with excess of adipose tissue, particularly women, or when emphysematous lung overlapping the heart practically obliterates the dullness, it may be impossible. In such cases the X ray picture may be of great service.

Other indications of dilatation may be: 1. Displacement of the apex-beat with a diffuse and slapping impulse. 2. Alteration in the character of the first sound which tends to lose its low pitch and become short and snappy. 3. The development of a mitral systolic murmur. 4. Acceleration of the pulse-rate.

Impairment of Function.

As has already been stated, a healthy heart contracts strongly with limited diastolic distension, and practically empties itself at each systole. It responds to exertion by increased output and increased rate of beat, and continues to empty itself at each systole. The conditions are materially altered when dilatation is present.

Starling[2] put forward the following explanation of heart failure resulting from impairment of tonicity:—

> "When the heart is dilated and its tonicity impaired, the diastolic distension may be excessive, and the heart does not completely empty itself at each systole so that there is some residual blood. In response to exertion, it might be expected that there would be some increase in output as a result of the increased capacity of the ventricle and the increased effort made by the heart, but the main result is increase in the residual blood and not in the output. An attempt is made by increase in the rate of beat to supply the increased output called for by exertion. This may to a certain extent suffice for a time, but eventually the heart muscle gives out as a result of working at an excessive speed, and the output becomes insufficient for the needs of the body."

Contractility.

I stated that the efficient working of the heart is dependent on the integrity of its properties of tonicity

[1] Orvosi Havi Ertesito, vol. vii., No. 5.

[2] Prof. E. H. Starling: THE LANCET, 1921, ii., 1199.

and contractility. I have dealt with tonicity, and we have now to consider how impairment of contractility can be recognised and what are its results. This is not altogether an easy problem. The chief symptom of failure of contractility would appear to be præcordial pain on exertion, and a risk of sudden death, in the absence of any very characteristic physical signs; in other words, the clinical syndrome of what is known as angina pectoris. In support of this Mackenzie[3] states:—

"I have taken a number of tracings from patients who have suffered from angina pectoris during attacks and when free from pain, and analysis of these tracings enables me to say that angina pectoris can occur when the excitability, conductivity, and stimulus-production are unimpaired. There remain the function of tonicity and contractility. The evidence of failure of tonicity is mainly shown by dilatation, and typical attacks of angina may occur when the heart is normal in size. Thus angina may occur when there is no impairment of tonicity."

The logical conclusion is, therefore, that the anginal syndrome is indicative of failure of contractility. Further positive evidence is, Mackenzie states, the fact that angina is sometimes associated with pulsus alternans which he regards as the characteristic sign of depressed contractility. Though criticisms may be brought against it, this conception of failure of contractility is a very helpful and rational one. The præcordial pain which occurs on exertion in angina is a sensory reflex and may be regarded as a warning sent out by the heart that the limit of its reserve has been reached, and that it is unable to cope with the increased demand on its energy entailed by the additional exertion.

It does not fall within the scope of this paper, nor would time allow me to discuss the character of the pain in angina, or the explanation of its distribution according to Head's hypothesis or even the differential diagnosis of præcordial pain. I am aware that there is some controversy as to the origin of the pain and the cause of death in angina, and that Clifford Allbutt put forward the theory that disease of the aorta was responsible for the former, and vagus inhibition from the shock of the severe pain for the latter. It seems, however, incredible that mere pain should cause arrest of the heart's action, unless the myocardium had been damaged and its functional activity seriously impaired by disease or interference with its blood-supply, and even assuming that disease of the aorta was responsible for the pain, of which there is no proof, there is then no apparent reason why exertion should induce an attack of pain. Moreover, extensive disease of the aorta resulting in aneurysm may occur without giving rise to præcordial pain. Many other theories have been put forward to explain the pain in angina, but I submit that the one I have suggested affords a reasonable and satisfactory working hypothesis.

What, then, are the factors which are responsible for heart failure in angina? It is generally admitted that the grave forms of angina are associated with serious pathological changes in the coronary arteries. Osler held this view, and Huchard, the French heart specialist, stated in his book on heart disease: "There are not several varieties of true angina, there is only one, that associated with disease of the coronary arteries." The most serious effect of disease of the coronary arteries is interference with the blood-supply to the heart muscle from thickening of their walls or narrowing of their lumen, of which the most severe degree is met with in syphilitic endarteritis obliterans, or from obstruction of their orifice by syphilitic disease of the aorta.

One can readily understand how the heart, dependent for its very life and ability to function on a free supply of blood through the coronary arteries, may when it is starved of blood by narrowing of their lumen, send up a cry of despair, when called upon for increased effort to which it cannot respond without an increased blood-supply. If the exertion is too severe or is persisted in, the heart comes to a standstill. Analogous to this is the "claudication intermittante" of French authors, first described by Boullay in 1831, sometimes met with in old horses with degenerated thickened vessels through which an adequate supply of blood does not reach the muscles in the legs. When called upon for too severe or too prolonged effort the muscles cannot respond and the animal comes to a standstill.

Narrowing of the lumen of the coronary arteries by endarteritis or obstruction of their orifice by syphilitic aortitis will cause the most severe and grave interference with the blood-supply to the heart muscle, and in less degree thickening of their walls or of the intima from arterio-sclerosis or atheroma and degenerative change will have the same effect. One or other of these changes is commonly found at autopsies on cases of angina pectoris. Many instances, however, occur in which no obvious disease of the coronary arteries is found post mortem in patients who have had during life symptoms indistinguishable from the anginal syndrome—that is, who have suffered from severe præcordial radiating pain on exertion, and have died suddenly. One also frequently meets with cases in which præcordial pain on exertion is a prominent symptom, but who make a good recovery and lose their symptoms. How can we reconcile this with the statements made by Huchard and others that true angina does not occur in the absence of coronary sclerosis?

We must first of all disabuse our minds of the idea that angina pectoris so-called is a disease. The term itself is derived from the Greek word ἀγχόνη, which means literally a strangling or throttling, hence we have the Latin word angina and the English agony. In medical parlance the term angina is employed to denote a syndrome of symptoms, the chief of which is præcordial pain on exertion, which are met with as a result of impairment of function of the heart muscle due to pathological changes. I have already stated that it is impairment of the property of contractility of the heart muscle which appears to be responsible. Contractility is the most vital and essential property which enables the heart to fulfil its function of propelling the blood into the circulation. Obviously if it fails completely, even for a moment, the heart must come to a standstill. The most serious pathological lesions, entailing grave and permanent impairment of contractility, are lesions of the coronary arteries or their orifices interfering with the blood-supply to the heart muscle, and of these syphilitic lesions are the most fatal. It is quite intelligible, however, that causes other than the cutting off of the blood-supply may impair contractility, for instance, fatty or fibroid degeneration of the heart muscle, which when advanced may prove almost as serious, and cases of sudden death are not uncommon with these conditions. On the other hand, there may be minor degrees of impairment of contractility associated with præcordial pain on exertion, due to depressing conditions of a temporary nature from which recovery is possible.

Disorders of Rhythm.

There remains for consideration the part played by disorders of rhythm in precipitating a cardiac breakdown. These may be classified as follows: 1. Impairment of conductivity leading to heart-block of varying degree, exemplified in its most severe form in the Stokes-Adams syndrome. 2. Acceleration of heart-beat, as in auricular flutter and paroxysmal tachycardia. 3. Irregularity in force and frequency of rhythm. (*a*) Sinus arrhythmia; (*b*) extrasystoles; (*c*) auricular fibrillation.

I do not propose to discuss the ætiology of, or the explanations put forward to explain, these various phenomena, but simply refer to the bearing they have on heart failure.

Heart-block.—Minor degrees of heart-block due to a temporary depression of conductivity which may result after some acute infection are not, as a rule, of any serious significance. In the more severe degrees

[3] Sir James Mackenzie: Diseases of the Heart, first edition, p. 40.

of heart-block, due to compression of the conducting fibres in the bundle of His by inflammatory exudate or cicatricial tissue, the prognosis is more serious, for though patients may survive many years with a very low pulse-rate, they are liable to syncopal attacks or some other manifestation of the Stokes-Adams syndrome induced by temporary cerebral anæmia, which may prove fatal.

In *auricular flutter and paroxysmal tachycardia* the attacks are, as a rule, of limited duration, but if very prolonged or very frequent they may exhaust the contractility of the heart muscle and lead to a fatal issue. Sinus arrhythmia and extrasystoles call for no comment, as they are of no serious import in themselves.

Auricular fibrillation occurring in the later stages of valvular disease, more especially in association with mitral stenosis, is stated by some authors to be the determining factor in the final breakdown of the heart. Doubtless it is a serious additional handicap to a heart already labouring under the mechanical disadvantages imposed by the valvular lesion and the changes in its walls and cavities entailed thereby. In the absence of a valvular lesion, however, auricular fibrillation may persist for many years in certain individuals without giving rise to any serious symptoms or even inconvenience. I have watched four cases of this nature for 15 to 20 years, and have been astonished to see how little the patients were incommoded; though electrocardiograms showed typical fibrillation in the two cases, I had the opportunity of obtaining them. Disorders of rhythm are of great interest, and may cause considerable discomfort to the patient, but they do not, I think, in the majority of cases play a predominant part in bringing about heart failure, though in some they may contribute to it.

In conclusion, let me say that in this communication it has been my object to outline a clinical scheme for the investigation of heart failure. When confronted with a case it is not sufficient to make a diagnosis of valvular disease or cardiac dilatation, &c., but we must make some definite idea as to the relative importance of the factors which may contribute to a cardiac breakdown, and as to the part played by any one of them in bringing it about. It is only thus that we can have a satisfactory basis for prognosis, and for formulating an adequate and suitable line of treatment.

A STUDY OF THE
INCIDENCE OF THE MINOR PSYCHOSES:
THEIR CLINICAL AND INDUSTRIAL IMPORTANCE.*

BY MILLAIS CULPIN, M.D. LOND., F.R.C.S. ENG.,
LECTURER ON PSYCHONEUROSIS TO THE LONDON HOSPITAL MEDICAL COLLEGE.

THIS work arose from an inquiry into telegraphists' cramp, undertaken by the Industrial Fatigue Research Board, who, assuming cramp to be a fatigue phenomenon, detailed two of their investigators, Miss May Smith and Mr. Eric Farmer, to conduct the inquiry. These workers found that cramp showed none of the characteristics of fatigue, but presented a medley of symptoms, of which many seemed to rest upon a psychological rather than a physiological basis. I was then given the opportunity of interviewing cramp subjects and a control group of non-cramps in order to find out whether cramp was associated with other symptoms of a recognisably psychoneurotic type. This was found generally to be the case, the other symptoms being often of a degree which would lead to the diagnosis of a severe psychoneurotic state apart from the cramp; they had often preceded by years the onset of cramp.

This result was not unexpected; but it was disconcerting to find that the controls also showed a considerable, though smaller, proportion of men and women suffering from similar symptoms. Was this proportion, like cramp, to be attributed to some feature of the work, or was it a phenomenon common to the general population? In other words, what number of the general population suffer from symptoms of a minor psychosis? (Although custom compels me to use the word *psychoneurosis*, yet its metaphysical implications lead me to prefer *psychosis*, with the prefix *minor* as a distinction between these mental disturbances and others typically leading to certification.)

We next examined 100 learners in the school of telegraphy, all of or about the age of 16. Here we found what was, to us, a surprising number of symptoms, often quite severe. One lad, aged 19, produced the following material:—

"I don't get on any too well. I'm under the impression something is wrong, and that makes it go wrong. I have trouble with V and 4; I want to rush them." Worse when watched. Has feeling of being observed, but "has hardened himself." But cannot buy his own clothes; gets his brother to buy them. Has *sentiment incomplétude*. "I always imagine what would happen in an accident." Has few friends. Has political opinions, but is always trying to convince himself. Few sports; fond of walking alone.

Fifty-four of the group passed my scrutiny as being free from symptoms, 27 showed slight symptoms, whilst in 19 they were classed as severe. This pointed to the conclusion that predisposition played a great part in the development of cramp, and indicated the presence of an unsuspected number of people who, even in youth, could be identified as likely to fall victims to disabling symptoms if placed in circumstances that might stimulate the latent psychosis.

Further to the psychological examination, each subject was tested by means of the McDougall-Schuster dotting machine, the pursuit-meter, and by the piezograph, an instrument devised to record the pressure exercised in using the morse key. The results of these tests showed some correlation with those of the examinations, but the dotting test was finally adopted as an objective check upon the results of the psychological investigation.

The results of the research up to this point are published by H.M. Stationery Office under the title of "A Study of Telegraphists' Cramp." Only a part of them will be dealt with in this paper.

Time Lost through the Minor Psychoses.

It had become clear that disabilities arising from the minor psychoses played a great part in swelling the totals of time lost through illness, whether diagnosed as neurasthenia, nervous breakdown and such like, or under the guise of gastritis, cardiac debility, dysmenorrhœa, or other manifestations of what are properly called neuroses. We now obtained sickness records from various Government departments and private firms, which showed extraordinary diversity between one and another, not only in the gross amount of illness, but in its nature, as indicated by the diagnostic classifications.

TABLE I.—*Establishment F. C.*

Days lost.	Diagnosis.	Days lost.	Diagnosis.
48	Cold abscess of thigh.	72	Appendicitis; operation.
48	Duodenal ulcer; operation	38	Motor accident.
33	Appendicitis: operation.	90	Pulmonary tuberculosis.
126	Injured in motor accident	108	" "
42	Influenza.	98	Renal calculus; operation
30	"	222	Sarcoma of ilium.

Average days sick leave per head per annum is 3·6.

Establishment W. H.

Days lost.	Diagnosis.	Days lost.	Diagnosis.
156	Influenza and pleurisy.	109	Cardiac and nervous overstrain.
159	(In separate periods.) Influenza, influenzal debility, nervous debility, nervous exhaustion, influenza.	92	(In two periods.) Debility after appendicitis, influenza, lumbago.
124	Nervous debility.	140	Rhinitis.
181	Cough, high blood pressure, bronchial catarrh, and fibrositis.	243	(In two periods.) Pyrexia, hydronephrosis.
278	Dyspepsia and nervous debility.	105	General debility.
		94	Debility.
		123	Nervous breakdown.

Average days sick leave per head per annum: 7·7 for men; 14·1 for women.

* A paper read to the Section of Psychiatry of the Royal Society of Medicine.

In Table I. the details are given of cases involving long sick-leave in establishment F. C. for one year and in W. H. for the same period, except that, the latter establishment being the larger, only the first 12 cases are taken.

Establishment B. N. provides a contrast between different years (only selected diagnoses are given; the figures refer to total days lost):—

TABLE II.—*Establishment B. N.*

	1923.	1924.	1925.
Anæmia	257	386½	418
Gastric	476	624	890
Dysmenorrhœa	197½	174	177½
Neurasthenia, nerves, and general debility	1705½	1206	1070½

Average staff is about 960, and 85 per cent. are females.
Days lost per annum: 7·2.

After 1923 the medical staff paid attention to the prevalence of the "neurasthenia" sick-leave, with the result that it diminished, as is shown; but the increase under the heads of "anæmia" and "gastric" left the total practically unaltered.

The local incidence of dysmenorrhœa varies strangely. One large firm, with excellent welfare arrangements and their own medical staff, has a high sickness-rate; in the year 1924 it was 14·41 and 16·48 days per annum for females in the age-groups 18 to 22 and over 22, and of the total days lost by the female staff 14·9 per cent. were due to dysmenorrhœa. Another large firm, a store employing about 1500 hands, has a maximum sick-rate of 2·6 days per annum, and by adding in the time spent resting in their sick-room the proportion from dysmenorrhœa reaches from ½ per cent. to 1 per cent. For purposes of comparison this figure should be doubled, as only half the staff are females. The firms are reasonably comparable with regard to material conditions.

Method of Investigation.

These figures indicate a serious interference with health and efficiency, and Miss Smith and the writer were now enabled to widen their investigations in an effort to ascertain some of the factors concerned in them. Questions calling for answer seemed to be: (1) What proportion of the population suffer from minor psychoses? (2) Do such people tend to enter particular occupations? (3) How far does occupation determine the outbreak of symptoms? The work already done showed that it is possible in an interview of about 20 minutes to find out with reasonable certainty the presence of typical symptoms in subjects who submit themselves voluntarily to such inquiry. With the exception of a few subjects showing, in the presence of symptoms, that mental attitude described by Charcot as "la belle indifférence de l'hystérique," and others—perhaps less than 1 per cent. of the total—who appeared to be on guard against revealing their weaknesses, the subjects gave every assistance. It is still to me a cause of amazement that some of them should pour out to a total stranger a mass of emotionally charged symptoms which have never been previously confessed. Indeed, I was often thanked for listening to them.

My leading questions have settled down into a regular form; it must be borne in mind that offence had to be strictly avoided; a single complaint might have wrecked the inquiry in the particular establishment where it occurred, but apparently harmless questions proved sometimes very searching. "Do you look forward to sticking to this job till you draw your pension at 65?" has one effect when put to a bright young thing of 19, and one quite different when asked of a woman of 35. A question originally used as a conversational gambit, "How do you like the work?" furnished answers that we think will have a statistical correlation with neurotic illness and soon gave us an insight into the state of harmony between the workers and their chiefs. Moreover, when a reasonable harmony existed in an establishment the question often revealed at once the mal-adjusted psychoneurotic.

But the search for symptoms was the chief aim. Anyone unfamiliar with the work might be puzzled if invited to ascertain whether a person is what is popularly called "neurotic," but the simplest method has proved to be direct inquiry. "Do you call yourself a nervous person?" generally brings forth an honest answer, and the subject may at once plunge into an account of his symptoms. If not, I ask first about fear of the dark, whether it existed in childhood, what form it takes, and whether it interferes with behaviour. Uncomfortable sensations of being observed come next; a surprising number of people of both sexes and of all classes declare they are too sensitive to go alone into a restaurant. Inquiry into the *sentiment d'incomplétude* is often the key that unlocks a host of obsessional symptoms. "Does anything in particular make you nervous?" opens up the way to the phobias, though specific forms may be sought. Sports and amusements pick out the socially adjusted, questions about dancing bring out the attitude to the opposite sex, and "Could you tell a lie with a cheerful countenance?" is not a test of morality, but the touchstone for *les scrupuleux* of Janet. Poise and general behaviour are observed, sweating hands and nail-biting are discussed, if noted. The former is often admitted to be a sign of immediate nervousness, and the latter, I have found, often appears long after childhood, at a time of emotional stress, and persists after the period of stress is over.

Some details of general psychological interest came to light, involving day-dreaming, the effect of noise, and the reaction to war experience.

Day-dreams.

Many of our subjects were occupied in routine work, such as entering amounts against names, arranging names under indexes and the like; others were typists, and, of course, we started with telegraphists. A question was framed to elicit how far such workers could divide their attention: "When you are at work do you think of it all the time, or can you let your thoughts go on to other things?" Some unexpected general principles emerged. The well-adjusted worker, as a rule, can carry on whilst his thoughts are elsewhere, even at such work as typing from shorthand notes; but if a difficulty arises, or he makes a mistake, the whole of his attention returns to the work in hand; in such cases the work, as judged by his superiors, is quite satisfactory, and he makes no more than an average number of mistakes. A few of the class without symptoms, generally conforming to Jung's extrovert type, seemed unable to grasp the purport of the question. Whether they never day-dreamed, or whether they lacked enough insight to recognise what they were doing I could never decide; they would sometimes declare that they could not imagine thinking of anything but the immediate work; a woman sewing, for example, would be assumed by such people to think of her sewing and nothing else.

A very different mental attitude is shown by other subjects. One may reply: "Oh, I always have to concentrate on my work or I should make mistakes"; and such an answer is, as events proved, the invariable prelude to the discovery of minor psychotic symptoms either of the anxiety or over-scrupulous type. I have, indeed, come to regard this striving for concentration as itself a psychoneurotic symptom. It is not, as a superficial observer might expect, necessarily correlated with efficient work.

There is a decided reticence, in both sexes, regarding the content of the day-dream. The conditions of the investigation prevented close questioning, but the admission was sometimes obtained that they were "castles in the air" and sometimes a fairy prince came into the story. Exceptional cases occurred in which the subject declared that work was a welcome means of keeping out unpleasant thoughts; this statement opened the way either to an admission of troublesome obsessional thoughts or to the discussion of some serious current stress.

Noise.

Few opportunities were offered of noting the effect of noise, but so far as our studies went, the well-adjusted subject is able to accommodate to noise after a day or two of discomfort; complaints of ill-results from noise came mostly from subjects with definite symptoms. There is a difference between noise made by oneself and that made by others, also between noise that is essentially a part of the work process and noise that is extraneous. Reaction to noise depends upon a mental attitude which regards it as a definite assault upon the subject's right to quiet. Those minor psychotics who have "good days and bad days" naturally suffer more on a bad day, and even some of the healthy class will admit to suffering from noise when they are "out of sorts."

Post-war Cases.

Ten years' experience of the treatment of the minor psychoses following war service has reduced to a commonplace the process of suppression. Every genuine war case—with the exception of a few obsessionals—presents an example of the suppression of emotionally charged war memories, ranging from a mere reluctance to talk about distressing incidents to a gross amnesia. Yet I had an uncomfortable knowledge that control cases had not been investigated, and this work gave me the opportunity of examining men who had passed mentally unscathed through strenuous war experiences. The result is decisive; men with war service who are found free from symptoms, when invited to relate the worst experience they passed through, will after a moment's thought produce such experiences, sometimes with a healthy expression of regret or disgust. Men with well-defined symptoms—whether supposed or not to be suffering from war-strain—display the usual resistances that show themselves in patients under treatment; they claim to have forgotten, or express annoyance at being asked to revive past horrors, or give generalised accounts with no personal or emotional value. The difference between members of the two groups is pathognomonic.

Standards of Assessment.

An early difficulty was the setting up of standards which would be stable and as far as possible independent of personal judgment. There have admittedly been variations in our standards, or, rather, standards have become better defined as the work progressed. At first I divided the subjects into those with and those without symptoms, the symptoms being divided into mild and severe. This was found inadequate, and six assessments were decided upon, ranging from 0 to +5; the standard of the last assessment was that I judged the subject to be in serious need of treatment on account of interference with happiness or efficiency, or both. I also noted, when possible, whether the predominating symptoms were those of hysteria, anxiety, or of an obsessional state. For the moment I only claim descriptive utility for these qualifications.

The presence of an apparently unimportant symptom—nail-biting, for example, or fear of the dark—did not at first exclude a subject from the 0 class, but cases occurred in which a symptom of that nature proved to be, as it were, at the peak of a symptom complex that almost escaped detection; hence any symptom whatever now places the subject at least in the +1 class. Whether that is justified may be debated, and for present purposes the 0 class and the +1 class may be added together for purposes of comparison between different groups. We regret that inexperience allowed us to be satisfied with a less detailed classification in our original Post Office work.

The placing of subjects in the other groups cannot be reduced to a system; it depends upon a weighing-up of all the symptoms and such impressions as are received during the interview.

Those cases, less than 1 per cent. of the total, in which I suspected that the subject was on the defensive, have been omitted from our figures, but it is significant that they nearly all came very badly through the dotting test. One subject presented such a curious mental picture that I could not decide whether he was an unrecognised genius or a mattoid. Two cases of mild recurrent melancholia—called neurasthenia—were detected and are omitted; also a mentally defective girl earning her living in a laundry, one probable dementia præcox, a woman of 35, who gave me an impression that she was hiding symptoms of a major psychosis, and a man whose case is of sufficient interest to be related now.

A lorry driver, aged 20. (Asked about day-dreams)—Sometimes has horrible thoughts; "fed up" with himself; suicidal thoughts. (Asked about feeling of being observed)—"Everybody's looking at me; sometimes I glance back and see them talking." (Do you worry about what others think of you?)—"They talk of me behind my back." "Mother is an invalid—in terrible agony; her illness started like mine—she told me so. Hers was hurried on through hard work, and the foreman says I'm not strong enough for the job. I get pains in my stomach and go dozy and sleepy." Admits he has had two or three mishaps when driving. Wears glasses for headache (+1·5 cyl.). Dotting score, 130.

This patient should be compared with another lorry driver, aged 25, in the same employment. He has never had a mishap in seven to eight years of driving. Has no symptoms whatever, but was operated upon for squint. Wears +2·25 cylinder in front of his good eye and, to rough tests, has no stereoscopic vision. Dotting score: 216.

The Dotting Test.

The McDougall-Schuster dotting machine consists of a revolving disc—like a gramophone disc—on which is fixed a paper bearing a spiral of small circles, at each of which the subject is instructed to aim with a stylograph, as they come into view through a slot in the cover. Since the spiral begins near the centre of the disc, it follows that the dots pass more and more rapidly in and out of view, and at last their speed is so great that few people succeed in hitting more than a small proportion in the last few sectors. What particular qualities are tested by the machine need not concern us now; the immediate interest is in the fact that Miss May Smith, working independently with it, obtains results that show a definite relation, in every group tested, with the results of my own personal interviews. Each group must be taken by itself, for in such a test workers with a flat-iron cannot be judged by the same standards as workers with a pen; in fact, their results are consistently lower. But in every occupation group those with a high assessment put up on the average a worse performance than the "noughts" and "plus ones." It is only an average, however. We do not claim that in individual cases it has any diagnostic value, except in a small group to be discussed later; but it confirms the significance of my own findings.

Miss Smith analyses the results in various ways, but for comparison I shall consider only the number of hits before breaking-point is reached—that is, before the subject misses as many as five dots in immediate succession.

Correlation of the Dotting Test with Psychological Findings.

Table III. shows dotting results grouped into four classes of descending merit, with a cross classification according to the presence of symptoms. The subjects were learners in the school of telegraphy; those with severe symptoms obtained no first places, 26 per cent. of them being placed in the lowest class. (It is noteworthy that 4·9 per cent. of cramp subjects reach the A class in dotting, thus showing the anomalous nature of the disorder).

The next table (IV.) shows the same and other groups with the mean of the number of hits. The figures headed "V" show the variability within each group, which increases with the severity of the symptoms, except in the case of the non-cramp controls; this indicates that among the severe cases, although the mean is low, yet some members of the group put

up very good records. It will be seen later that a very important reason is offered for this phenomenon, but the absence of variability in the non-cramp controls needs explanation. I believe it is due to my inexperience. They were my first essay in this investigation, and I believe that I missed symptoms which I should now expect to find; so that some of the good performers in the 0 class should be in the other.

Meanwhile, without spending time upon more figures, I will ask you to accept the statement that the correlation between the results of the two methods of examination is constant in all the groups examined.

TABLE III.

Psychoneurotic symptoms.		Dotting.			
		A	B	C	D
None (54)	Number	5	19	26	4
	Per cent.	9	35	48	7
Slight (27)	Number	4	14	5	4
	Per cent.	15	52	18	15
Severe (19)	Number	0	7	7	5
	Per cent.	—	37	37	26

Types Recognised at the Personal Interview.

A pure conversion hysteria was rarely met, though some cramp cases seemed to conform to that type. A hysterical stigma that I frequently "suggested" in my work with war cases is the yielding grip shown when the subject is invited to resist the attempt to pull open the fingers of his clenched hand. This was often seen in cramp cases and I have seen it in three other subjects of this inquiry, always associated with further symptoms of hysteria. Here is one example:—

Female, clerical worker, aged 32. Suffers from rheumatism and headaches. Used to be nervous till the age of 19; had fear of the dark and terrifying dreams. Appendicectomy at 27 after 18 months' pain. Periods ceased for 11 months, then became excessive till hysterectomy was done for fibroids. She gave up nursing because her heart was wrong. Often has heart attacks at work. One lung is also wrong. Wears glasses for headaches. Yielding grip with either hand.

The characteristics of this case are total absence of anxiety in the presence of anomalous physical complaints, and the pathognomonic sign of the yielding grip.

The following is an example of what I call anxiety with hysteria:—

Female, clerk, aged 33. Dislikes the work. Can day-dream without interference with her work. A month ago was away for "nerves." Had made a mistake and it worried her. Always had fear of the dark or of being alone. Nervous if spoken to by strangers. Cinemas try her eyes. Has good and bad days. No energy; improves as the day goes on; has a feeling of "something awful going to happen—a cloud." Tennis is too much for her: influenza left her heart weak. (Asked how that showed itself.) Goes faint in trains and crowds. Could not sit in a small room like this: would make her come over all faint; no, not frightened at all; it's the heart. Wears glasses (+0·25 cylinders) to avoid strain and headache. Had all her teeth out for gastritis before age of 21. Hands are blue. Does not look forward to staying on for her pension. Talks frankly about shortage of men, but declares indifference. Grip good. Assessed at +5. Dotting score, 162.

I do not attempt to define hysteria, but in this case there are frank anxiety symptoms and the readiness of the patient to ascribe her troubles to heart, teeth, and eyes, influences me in adding the diagnostic qualification of hysteria.

The next case is similar clinically:—

Laundry worker, female, aged 34, married, four children. Likes the work very much. Would not change it if given the chance. "My nerves are all bad. The least worry makes me go all of a shake. I worry at the least thing. I'm afraid in the dark or of being alone. Wouldn't go along a dark road." Describes claustrophobia. "Should worry and fidget in this room. Never go in a 'bus; wouldn't go alone in a train; feeling of being observed; never go out by myself." She has to find a companion to accompany her to work. A summons to see her manager would make her go all hot. "All of us have been born with nervous debility." Never goes to the pictures. Is asocial. She has a yielding grip, which she ascribes to rheumatism. Assessed at +4. Dotting, 87.

The interest of this case is in the fact that a woman with these symptoms is able to carry on as a laundry hand without being affected in her work, and without any excess of sick-leave. She looked fairly placid, was rather fat and flabby, and gave no external indication of her minor psychosis.

The next case is one of pure anxiety in a good type of man successfully holding a responsible position.

TABLE IV.—*Dotting Records and Mental Type.*

Psychoneurotic symptoms.	100 learners.		100 clerical workers.		Telegraphists: 46 non-cramp subjects and 41 cramp subjects.	
	Mean.	V.	Mean.	V.	Mean.	V.
None	171 ± 3·7	24·4 ± 1·64	183·6 ± 3·68	21·9 ± 1·49	176 ± 5·31	23·7
Slight	170 ± 6·1	27·9 ± 2·71	183·0 ± 5·8	21·1 ± 2·34	—	—
Severe	145 ± 7·2	30·6 ± 3·8	170·6 ± 5·5	24·7 ± 2·39	148 ± 5·8	22·6
(Cramp subjects)	—	—	—	—	101 ± 6·8	64 ± 6·48

Aged 37. Likes his work. Would not do work at which divided attention is possible. (This attitude, judged in the light of his symptoms, may represent a desire to keep busy in order to drive away his anxiety.) Is highly strung. Wakes up and thinks of his work. Tended to stammer after the war. Speaks slowly now as a result. Was afraid of the dark after the war. Hates social activity: dances and such-like. Gets frightened at a tea-table. Has now got over the inordinate dread he had after the war. Describes claustrophobia. Hates theatres. Is able to lecture in spite of his fears. Hopes he could tell a lie if he wanted (absence of obsessional over-scrupulousness). Has experienced the *sentiment d'incomplétude*, but can "let it rip." Questioned about his worst war experience, he says it is hard to say what it was, then makes a joke about blood and entrails with no emotion whatever. Assessed at +3. Dotting score, 62 (a very bad record).

This man is kept from a breakdown by his keen interest in his work; if some added stress led to a breakdown, it would be regarded as a bolt from the blue if his previous condition was not ascertained.

The Obsessional Subject as Revealed by the Dotting Test.

The correlation between the two methods of examination was occasionally disturbed by a subject with a high assessment doing an exceptionally good performance at the dotting. One day my colleague put before me my notes on half a dozen cases and asked what was common to them all; I answered that they were all "obsessionals" and was told that these were the people who blurred our statistics by their excellent dotting. Here is an example:—

Male, aged 43, doing responsible clerical work. Work is a bit monotonous. Can day-dream without interference with work. Can cast up a column and talk. Writes music and harmonises for fun. Gets a physical sensation from music, but analyses and criticises. (Are you nervous?) "That's a funny question. I get agitated at music or chess." Prefers the dark. Easily gets fidgety and impatient. Strong *sentiment d'incomplétude* since boyhood. Tells a story of a fear that made him always rush past a lavatory. Has a dread of fire. Had to give up chess because of an obsession to arrange everyone in the street in accordance with the knight's or bishop's move. Assessed at +3. Dotting, 322. The best we have seen.

Note the almost entire absence of anxiety as contrasted to the case previously described; note also

the difference in the dotting score in two men, both of whom are well educated and efficient at their tasks. This latter case admittedly shows few symptoms—they are curiosities rather than disabilities—but enough to place him in his group and account for the extraordinary dotting.

The next subject is more likely to come to disaster through her symptoms, which are, I think, ominous in one of her age.

Female, aged 19½, art student. Can draw and be read to; if not read to she has to make up stories. Is very nervous. Has terror of fire—no reason for it. Will not sleep high up in a house. Gets up and goes round the house, and whilst doing so argues the pros and cons. Terrified at thunder or loud organ. No fear of dark but of midday blight (i.e., overhead fog); hates the orange colour. Has feeling of being observed, but ascribes it to her height; to counteract the feeling she has "created an atmosphere of being fast." *Sentiment d'incomplétude* every night of late. Hands shook and she had fear of traffic after an operation. (What operation?) "My inside had slipped." "I dissect my actions and then dissect the dissection. A vicious circle till I nearly go mad. I try; and can't stop. This started at the age of 15. I have nonsense dreams of fire and being chased by bulls. I am social or unsocial in moods and think of marriage in moods." Describes hypnagogic hallucinations. Assessed at +4. Dotting, 236.

Here the fears are quite specific, only appearing in special circumstances and therefore not likely to interfere with the dotting; the main symptoms are obsessional.

Since this behaviour of the obsessional subject was noted Miss Smith has written on every exceptionally good record—before I examine the subject—the words "obsessional or normal," and so far every one so noted has been obsessional. But it does not follow that every obsessional makes a good score. The worst score, apart from cramp subjects, was made by a "plus 5" obsessional who was in a state of severe secondary anxiety.

Table V. shows the mean of the dotting performance of three groups:—

TABLE V.

Diagnosis.	No. of cases.	Mean of the dotting test.
O	250	164 ± 2·0
Obsessional	38	201 ± 5·5
Hysteria or anxiety ..	105	142 ± 3·1

The figures after those expressing the mean show the probable error, calculated statistically. The most important observation is that all exceptionally good records are made by obsessional subjects.

Results of Investigation of Different Industrial Groups.

In Table VI. the percentages are based upon the examination of not less than 100 subjects in each group:—

TABLE VI.—*Percentage Distribution of Assessments in Different Groups.*

—	Clerical work.		Routine clerical.		Laundry.	Art school.	Telegraph learners
	A	B	C	D	E	F	G
0	60	46·4	52	49	43	32	54
+1	19	22	20	21	25	26·8	27
+2	18	20	11	17	12	16	13
+3	3	9·3	10	8	15	14·4	5
+4	0	2	6	3	5	9	0
+5	0	0	1	2	0	1·8	1

Group A represents establishment F. C., whose sickness records I detailed early in this paper. Those records showed an absence of psychoneurotic illness, and this is associated with a high percentage of the first two assessments and an absence of any assessments in the last two groups. But this is not the whole of the information available, for we know that special circumstances directed the attention of the medical staff to the importance of studying the temperamental qualities of their employees, and there had been a definite attempt to exclude people judged temperamentally unfit. The results seem to have been the exclusion of hysterics and of some anxiety subjects, but probably a selection of obsessionals, who are by no means to be rejected on grounds of inefficiency. The firm has a high percentage of employees (84 per cent.) who say they are satisfied with their job.

Group B has not been subject to this selection, and only 62 per cent. are satisfied. Their sickness-rates, however, show no excess of psychoneurotic troubles.

Groups C and D are very similar. There is a considerable amount of psychoneurotic illness, and only 58·4 and 64·3 per cent. are satisfied with their jobs.

Group E produced results that surprised us. We knew that psychoneurotic illness was non-existent therein, and we expected to find a totally different incidence of latent minor psychoses. Yet our findings gave results practically identical with those obtained from clerical workers. (The first two assessments should be added together to give a fair comparison; a change in the standard of assessment has increased the +1 class at the expense of the noughts.) Contentment with the work seems to be a characteristic of this laundry—which is managed on enlightened lines—and it was rare to find a worker who could be persuaded to express a wish to change into any other occupation.

Group F gave us an insight into what is described as the artistic temperament. All its members were in fairly comfortable financial circumstances, and all were in an occupation which they had selected in accordance with their own desires. No illness records were kept, but absence was negligible. The high assessments were largely due to the presence of obsessional subjects.

Group G suggests that symptoms are absent or less easily detected in some young people who will probably show symptoms at a later period. It shows, however, that symptoms are present at an early age and can be detected.

Among the laundry workers are a fair number of girls between 14 and 15 years of age. Although symptoms in them are not well defined, yet types can be recognised and the assessments are confirmed by the dotting test.

Early in our work we found there was no significant statistical difference between the results in the two sexes, and therefore no attempt has been made to keep the figures separate.

General Conclusions.

The dotting test keeps a check upon the results of the psychological examination.

There is a high proportion of people in the general population suffering in varying degrees from the minor psychoses. These may not affect sick-rates in some occupations, but in others may be the cause of considerable loss of time through illness.

There is no reason to believe that there is any active selection of particular occupations by psychoneurotic people, except in the case of art students, where the results of the investigation confirm popular beliefs about the "artistic temperament."

The results suggest that the commonly supposed "causes" of psychoneurotic illness are merely factors in exacerbating a previously existing condition. Yet the fact that such illness is absent in some groups indicates the importance of studying exacerbating factors that must be present in those groups with a high sick-rate.

MIDDLESEX HOSPITAL.—The sum of £1000 has been contributed towards the hospital's rebuilding and development fund by Mrs. Bethell "as a token of her great esteem and affection for Sir Rowland and Lady Blades." Sir Rowland Blades was Lord Mayor of London last year.

TUMOURS OF THE SPINAL CORD.

BY ALEX. MILLS KENNEDY, M.D. GLASG., M.R.C.P. LOND.,
PROFESSOR OF MEDICINE AND DIRECTOR OF THE MEDICAL UNIT, WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF;
AND
LAMBERT ROGERS, F.R.C.S. EDIN.,
ASSISTANT IN THE SURGICAL UNIT, WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF.

SPINAL cord tumours are perhaps most often recognised in special neurological clinics where all kinds of nerve cases are sent. Hence it is not without interest that all the six cases here recorded appeared in the general wards of this medical unit within the space of one year. The majority, in fact, occurred within a period of a few months. There were five males and one female. Their ages were: males, 16, 27, 50, 51, 54; female, 16. There was no occupational incidence. Only one case (Case 1) dated the onset of his symptoms from an accident—a severe bruise over the great trochanter four years previously. Another (Case 5) slipped and fell while lifting a heavy weight, but this occurred six weeks after he had first noticed symptoms. None of the others had received any injury whatsoever. It must be remembered that at the onset the symptoms may be slight, and any interference with walking may be easily overlooked until, perhaps, one day the patient stumbles at his work, and from this time he becomes aware of some difficulty in walking. If he were doing anything particular at this time—e.g., lifting a heavy weight—he may be led to believe that it was this that caused him to stumble and so was responsible for his present condition.

Four of the cases suffered from "girdle" pain, and in three of these it was associated with an encircling band of cutaneous hyperæsthesia. One of the cases, with no complaint of "girdle" pain, exhibited an encircling band of cutaneous hyperæsthesia, and only one case (Case 2) had neither "girdle" pain nor hyperæsthetic band.

The earliest symptoms were usually weakness or heaviness and stiffness in the legs—usually one leg first—and consequent difficulty in walking. One patient, however (Case 2), had complained of "neuritis" (pain) in feet and legs for nine and a half years before the onset of weakness in the leg. Another (Case 3) complained of the "girdle" pain—"like the pain of toothache"—shortly before the onset of a slight "limp."

The spinal level diagnosis arrived at from a study of the physical signs was confirmed in all cases before operation by lipiodol injection into the spinal canal through the cisterna magna. The injection was made with the patient sitting with his head flexed and chin resting on his chest, novocain being used as a local anæsthetic. The cisterna magna was punctured with a lumbar puncture needle, 5 c.cm. of cerebro-spinal fluid drawn into a syringe, 1·5 c.cm. of lipiodol injected, and 2 c.cm. of the cerebro-spinal fluid then replaced. The spine was X rayed throughout immediately after the introduction of the lipiodol, six hours later, and again 24 hours after the injection.

In Case 2 the normal lumbar curve of the spine was rather straightened, and X ray examination showed some slight lipping of several vertebræ—early spondylitis deformans. In Case 3 there was a slight dorso-lumbar scoliosis with the curve convex towards the left; in all probability, however, this was due to considerable cicatrisation in the right lumbar region resulting from a severe scald in early childhood. In none of the other cases, however, was there any obvious spinal deformity, and X ray examination proved negative.

Slight tenderness on pressure over fifth and sixth dorsal spines was elicited in Case 3, and over eighth and ninth dorsal in Case 6, but no spinal tenderness was discovered in any of the other cases.

The Wassermann reaction in blood and cerebro-spinal fluid of all cases was negative.

The cerebro-spinal fluid, as obtained by lumbar puncture, showed no increased tension and no increase of cells. In Case 2 the protein content was normal, but in all the other cases there was an excess of globulin and a trace of albumin. The fluid showed xanthochromia in Cases 1 and 3 only.

Pathology of the Tumours.

In two cases the tumours were within the substance of the cord—intramedullary—and could not be removed (Cases 4 and 6). Posterior longitudinal chordotomy was done in one of these (Case 6) and the dura left open, but in the other (Case 4) it was not considered advisable, after opening the spinal canal, to incise the cord at that particular stage. Decompression of the cord can be done at a later date when further indications for such procedure arise. In another (Case 5) the growth had originated within the cord, and burst through its posterior aspect and spread within the meninges (intra- and extra-medullary); it was partially removed and the dura left open. The remaining three were found within and growing from the meninges, compressing but not infiltrating the cord—extramedullary—and they were successfully and completely removed. Of the latter, one (Case 3) was a lobulated mass about 1½ in. long, one (Case 1) was about the size of a broad bean, and the third (Case 2) a trifle smaller. In the intramedullary cases the site of the tumour was revealed at operation by a localised bulging of the cord.

The three extramedullary tumours were endotheliomatous, containing psammoma bodies, whereas that which was both intra- and extra-medullary—having burst through from within the cord—appeared to be gliosarcomatous. The pathological nature of the two intramedullary growths, of course, was not determined.

Their Clinical Features.

The principal clinical features of the cases are briefly summarised below. The signs are those present when the patients came under our observation.

CASE 1.—Male, aged 27. Four years' duration.

Symptoms.—Gradually increasing difficulty in walking. Feeling of heaviness in, with inclination to drag, the right leg, followed by increasing stiffness. Left leg became similarly affected two years later. Painful flexor spasms in legs began to occur and a burning sensation developed in the form of a band around the waist. One and a half years after this incontinence of urine and fæces set in and three months later the spasticity in the legs had developed to such a degree that he was quite unable to move them.

Signs.—Marked spastic paraplegia. Quite unable to move legs and unable to stand—legs collapsing under him. No gross atrophy. Sensibility to light touch impaired throughout lower limbs and trunk up to level of umbilicus. Band of cutaneous hyperæsthesia immediately above this. Pain and thermal sensibilities unaffected.

Reflexes: Knee- and ankle-jerks greatly exaggerated on both sides with patellar and ankle-clonus. Plantars both extensor. Abdominals: Upper, normal; lower, absent.

Spinal level diagnosis: Tenth thoracic segment.

Lipiodol injection: Lipiodol held up completely as an opaque pear-shaped blob with its base at the level of the disc between the seventh and eighth thoracic vertebral bodies. No change after 24 hours, indicating complete blockage of the intrathecal space.

CASE 2.—Male, aged 51. ? Ten years' (or six months') duration.

Symptoms.—Pain in feet and legs—"neuritis of feet"—for ten years, with occasional "giving way" of right leg under him. Nothing more until nine and a half years later—i.e., six months before coming under our observation, when increasing weakness and stiffness began to affect first his right leg and, a month later, his left leg. In another three weeks painful flexor spasms in the legs began to occur, and increased in severity until eventually he was quite unable to straighten his legs. No incontinence or "girdle" pain had developed.

Signs.—Marked spastic paraplegia—flexion spasticity of both legs which was never completely relaxed, but often increased spasmodically and gave rise to much pain. Patient lay curled up in bed. Lower half of abdomen and, at times, upper half were rigid. No muscular atrophy. Some alteration of thermal sensibility throughout lower limbs and trunk up to one inch below umbilicus. Immediately below this level there was a narrow girdle-like band of impaired

tactile sensibility, but elsewhere touch was unaffected. There were no other sensory changes anywhere.

Reflexes: Knee-jerks present, but difficult to elicit, on account of extreme spasticity. Ankle-jerks much exaggerated and associated with clonus on both sides. Both plantars extensor. Abdominals could not be evoked because of the spastic condition of abdominal wall.

Spinal level diagnosis: Tenth thoracic segment.

Lipiodol injection: Lipiodol held up completely in the form of two opaque blobs at the level of the intervertebral disc between seventh and eighth thoracic vertebræ. Twenty-four hours later, however, most of the lipiodol had passed right down to the lower end of the theca indicating an incomplete "spinal block."

CASE 3.—Female, aged 16. Two and a quarter years' duration.

Symptoms.—Persistent pain in right side, at level of costal margin, extending across abdomen towards umbilicus and, later, right round body. Onset of "girdle" pain was followed by slight difficulty in walking—she developed a "slight limp"—which became more pronounced, and gradually the legs became stiff. About two years after onset "tingling" in feet began to trouble her, and then "loss of feeling" in feet and legs gradually became more marked. Urinary and fæcal incontinence developed later after admission to hospital.

Signs.—Complete spastic paraplegia; both legs rigid and extended. Right rather more affected than left. Patient poorly nourished and thin generally. Band of tactile hyperæsthesia, about two inches wide, encircled the trunk at the level of the umbilicus, while immediately below this there was another encircling band, 3½ in. wide, where sensation was impaired. Below this level there was complete anæsthesia to all forms of sensation.

Reflexes: Knee- and ankle-jerks exaggerated on both sides, and well-marked ankle-clonus obtained. Oppenheim's and Gordon's reflexes easily elicited. Upper abdominals present, lower absent.

Spinal level diagnosis: Tenth thoracic segment.

Lipiodol injection: Lipiodol held up in the form of a long tubular opacity with its lower limit at the intervertebral disc between eighth and ninth thoracic vertebræ. Practically no change after 24 hours, indicating complete "spinal block."

CASE 4.—Male, aged 54. 18 months' duration.

Symptoms.—Persistent "burning" pain in left heel and ankle, gradually extending up leg to lumbar region. Six months later weakness and stiffness in legs—particularly the right—with consequent difficulty in walking, set in, and at the same time he experienced numbness and loss of sensation in the right leg from knee downwards. The latter, however, only lasted for three months and was succeeded by a "girdle" sensation—as if being "tied round the waist." Next, painful cramps in feet and legs troubled him, and sometimes flexor spasms of right leg. Eventually urgency of micturition and defæcation developed.

Signs.—Very slight unsteadiness in gait due to slight spasticity in right leg. Occasional flexor spasms of legs on moving feet in bed. No muscular atrophy. Sensibility to light touch impaired throughout left leg and left side of trunk up to a line midway between pubis and umbilicus. Immediately above this line a band of hyperæsthesia to light touch completely encircled the body, and immediately below it a narrow band of hyperæsthesia to pain extended across the abdomen. Below the latter band on the left side sensibility to pain was slightly diminished all down the left leg. On the left side, from immediately above the level of the umbilicus downwards along the left thigh to about three inches below the level of the perineum, finer differences of temperature (epicritic) could not be appreciated, but wider ranges could. Left leg showed diminished sensibility to deep pressure and diminished vibration sense. Vibration sense was also diminished over vertebral spines below first lumbar.

Reflexes: Right knee-jerk exaggerated. Both plantars extensor—slight on left, but very marked on right and associated with active withdrawal of foot. Oppenheim's reflex present on right side only. Abdominals absent.

Spinal level diagnosis: Ninth thoracic segment.

Lipiodol injection: The bulk of the lipiodol was held up at the level of the intervertebral disc between the fifth and sixth thoracic vertebræ. A small quantity, however, passed down to the lower limit of the meninges, leaving a few droplets at intervals on the way down. Twenty-four hours later the appearances were practically the same. A partial "spinal block" was thus indicated.

CASE 5.—Male, aged 50. Twenty-one months' duration.

Symptoms.—Weakness and stiffness, of gradual onset, in right leg, associated with band-like feeling around waist, and followed two months later by similar affection of left leg. Both legs eventually became quite spastic, with calf muscles contracted and feet and toes pointing down, particularly on right side. Abdomen became rigid and he was scarcely able to move about at all. His hands became involved 15 months after onset; his grip became weak, the right first and more markedly affected. Eighteen months after onset he found he "had no feeling" from lower part of chest downwards, and there was a tendency to tonic flexion of both elbows and the fingers of ulnar side of each hand.

Signs: Complete and marked spastic paraplegia. Only able to move toes of left foot slightly and bend left knee. Any attempt at voluntary movement set up increased muscular spasm in legs. Spasms often occurred involuntarily also. Both arms rigid, especially left, with flexor contractions of elbows, wrists, and fingers of both sides. Unable to feed himself. Atrophy of first dorsal interosseus muscles of both hands, and, to a lesser extent, of other dorsal interossei of right. No gross atrophy elsewhere. Almost complete anæsthesia to touch (epicritic) in both legs and trunk up to a line encircling chest about 1½ in. above nipples and crossing second dorsal spine behind, and involving also the second dorsal area on the inside of each upper arm. Complete anæsthesia to pain (pin-prick) throughout left leg and left half of trunk corresponding to the limit of tactile anæsthesia. Over the corresponding area on the right side sensibility to pain was diminished, not absent. Complete loss of temperature sense throughout both legs and trunk corresponding to the area of tactile loss. Vibration sense absent in left leg up to knee, and in right up to junction of middle and upper thirds of tibia. No band of hyperæsthesia.

Reflexes: Knee-jerks greatly exaggerated—particularly the right—and well-marked patellar clonus. Ankle-jerks exaggerated, with well-marked clonus. Both plantars extensor and associated with active withdrawal of legs. Abdominals could not be elicited on account of abdominal rigidity. Supinator jerks active and equal. Biceps and triceps absent. Jaw-jerk absent.

Spinal level diagnosis: Below fifth, but involving seventh and eighth cervical and first dorsal segments.

Lipiodol injection: Most of the lipiodol was arrested at the level of the intervertebral disc between fourth and fifth cervical vertebræ, with three or four small drops lower down in the cervical region. Twenty-four hours later, except for a minute drop at the lower limit of the canal, there was no change, indicating a practically complete "spinal block."

CASE 6.—Male, aged 16. Sixteen months' duration.

Symptoms.—Stiffness, heaviness, and loss of feeling in left leg of sudden onset. Unable to stand. Improved, and after two months was able to walk about with aid of a stick. Two months later could walk unaided—only a slight "limp"—but had occasional flexor spasms of left leg. Came under our care five months after onset.

Signs.—Very slight spasticity of left leg. No atrophy. Band of hyperæsthesia to touch, 2½ in. wide, encircling body at level of eighth, ninth, and tenth dorsal spines behind and passing downwards and forwards across the umbilicus, more marked on left side. Sensibility to touch and pain slightly diminished throughout left leg, and just below left knee thermal sensibility was disturbed over a small area.

Reflexes: Knee-jerks—left exaggerated, right not exaggerated. Patellar clonus on left side, no ankle-clonus. Plantars—left extensor, right flexor at first, but later became extensor. Lower abdominals less brisk than upper.

Operation was advised, but strenuously refused by patient's mother, and he was removed from the hospital. He remained very well and even resumed work, but 11 months later he again suddenly lost the power in both legs and developed incontinence of fæces and retention of urine with overflow. Five days later he was sent into the wards, and the following condition was found.

Signs.—Complete paraplegia, with spasticity more marked in left leg. Occasional involuntary flexor spasms of left leg. Sensibility to light touch (brush) absent throughout right leg up to level of great trochanter and in left up to a line just below this. From these levels up to a line midway between umbilicus and ensiform, and passing across eighth dorsal spine behind, appreciation of light touch diminished. Thermal sensibility lost in both legs and impaired above over an approximately corresponding area. Appreciation of pain (pin-prick) absent in legs, and diminished above up to about one inch below the umbilicus. Vibration sense absent in both legs.

Reflexes: Knee-jerks—left exaggerated (with patellar clonus), right present, not exaggerated. Both plantars extensor. Upper abdominals present, lower absent.

Spinal level diagnosis: Probably first lumbar segment with some extention or pressure effect upwards to the ninth thoracic.

Lipiodol injection: Lipiodol held up completely in the form of two opaque lateral columns diverging below—their lower ends being at the intervertebral disc between the tenth and eleventh thoracic vertebræ. Twenty-four hours later the lower half of the right column of lipiodol had remained in situ, but its upper half, together with that on

the left side of the cord, had passed downwards to the cul-de-sac at the lower end of the meninges, leaving a few irregular blobs scattered throughout the canal along its tract of descent. A partial "spinal block" was thus indicated.

Commentary.

Cases 1 and 2 were operated upon under intratracheal ether, the remaining four under nitrous oxide and oxygen. The latter method was adopted because Case 2 succumbed to widespread purulent bronchitis 10 days after operation. The remaining five all made good recoveries and left hospital much improved.

In performing the laminectomy a longitudinal incision was used in all cases, its centre being made to correspond with the spinal level diagnosis. In one case three laminæ were raised, in another five, and in the remainder four. Before removing the laminæ the soft parts were protected by rubber sheets, and at intervals throughout the operation a stream of warm saline was used to irrigate the wound. Fine silk sling sutures having been passed through the dura, the latter was opened longitudinally. In those cases (1, 2, and 3) from which the tumours were removed, and also in Case 4 (a small intramedullary tumour) the dura was subsequently closed with fine cat-gut, but in Cases 5 and 6 it was left open to permit of greater decompression. In Case 3 three posterior roots had to be cut before the tumour could be removed.

Cases 1 and 2 were nursed lying on their backs after operation, but the others were kept prone for about a fortnight to avoid pressure on the wound. In order to accustom the patients to this posture they were made to practise it for several days before the operation.

PASSIVE IMMUNISATION AGAINST SCARLET FEVER.*

BY EDWARD JAMES, M.B. ABERD., D.P.H.,
LATE SENIOR ASSISTANT MEDICAL OFFICER, PLAISTOW HOSPITAL.

FROM time to time scarlet fever makes its appearance in wards not intended for sufferers from that disease, both in isolation and in other hospitals, where, apart from the possible consequences to those infected, it may interfere seriously with the admission and discharge of patients. In scarlet fever antitoxin we have at our disposal a means of producing a passive immunity, temporary but valuable, in patients exposed to infection. Comparatively little has been published in this country on the amount of antitoxin adequate for protection. This can be ascertained only by using varying quantities in different series of patients, for, in the absence of any certain method of standardisation, different batches of antitoxin may vary considerably in antitoxin content. Now it is practically certain that no Dick-negative person will develop scarlet fever. Hence, if Dick-positive reactors can be rapidly made Dick-negative and kept negative even for a few days, not only could an outbreak of scarlet fever be limited, but an effort could be made, during this brief period of immunity, to trace and deal with the source of the original infection. The ability of a scarlet fever antitoxin to produce and to maintain passive immunity as measured by the Dick test provides us with a rough method of estimating its antitoxic content, but this passive immunity method must be correlated with other methods before we can hope to arrive at a sound method of standardisation.

In this investigation I have limited my work to an attempt to determine the amount of antitoxin sufficient to protect susceptible contacts of scarlet fever for a period of seven to ten days. I have chosen this period for two reasons: first it is unlikely that a patient, who has been rendered Dick-negative within a few hours of exposure to infection, will develop scarlet fever if that passive immunity is maintained beyond the period of incubation; secondly, although a period of 14 days might be safer, the amount of antitoxin required for this is probably more than twice that which is adequate for a period of seven to ten days. Part of this work was done in wards where no scarlet fever had occurred, but latterly the appearance of an occasional case of that disease among diphtheria convalescents made it necessary to prevent the spread of infection by producing passive immunity in susceptible contacts. It may be urged, of course, that outbreaks of scarlet fever in diphtheria wards are usually limited to one or two patients, and that passive immunisation is therefore unnecessary. It can never be certain, however, that scarlet fever will not spread more extensively, and it seems only reasonable to make use of a preventive measure which is both simple and effective.

In the following experiments scarlet fever antitoxin was given intramuscularly to several series of Dick-positive diphtheria convalescents. Dick re-tests were carried out in 24 hours on all patients; in 48 hours in those who were still positive at the first re-test, and subsequently at weekly intervals until they again became Dick-positive, or for as long as their stay in hospital would allow. In dealing with a diphtheria ward where scarlet fever had made its appearance, all the contacts were immediately Dick-tested, and antitoxin was given to the positive reactors. Re-tests were made at similar intervals. Except where otherwise stated, the Dick toxin employed was a 1/1000 dilution of ×48.

Table I. shows the results obtained in a series of ten children with a dose of 5 c.cm. of an unconcentrated serum (A). This table shows that only four out of ten were rendered Dick-negative in 24 hours, and that the remaining six were still positive in 48 hours. All ten were positive at the end of seven days. 5 c.cm. of this serum, therefore, was quite an inadequate dose.

TABLE I.

Serum.—Type A; dose 5 c.cm.

No.	Age.	Re-tested in—		
		24 hrs.	48 hrs.	7 days.
1	5	+	+	+
2	3	0		+
3	4	0		+
4	4	+	+	+
5	2	0		+
6	3	+	+	+
7	3	0		+
8	6	+	+	+
9	3	+	+	+
10	2	+	+	+

TABLE II.

Serum.—Type A; dose 10 c.cm.

No.	Age.	Re-tested in—			
		24 hrs.	48 hrs.	7 days.	14 days.
1	5	0		0	+
2	4	0		0	+
3	2	±	0	±	+
4	2	0		0	+
5	2	0		0	+
6	6	0		0	+
7	3	0		±	
8	2	±	±	±	
9	4	0		+	
10	3	±	0	±	

Table II. shows the results in a series of ten children with a dose of 10 c.cm. of the same serum. In this experiment seven patients out of ten were rendered Dick-negative in 24 hours, and two of the other three in 48 hours. Five were still negative at the end of a week, but all ten had become positive in 14 days. We may therefore conclude that even 10 c.cm. of this unconcentrated serum was an inadequate dose, and that the amount of such a serum necessary to keep patients Dick-negative for seven days would be too great to be of practical value.

Table III. shows the effect of a concentrated serum (B), given in a dose of 2·5 c.cm. to ten children in a diphtheria ward within 24 hours of the occurrence of a case of scarlet fever. This table shows that all ten patients were rendered Dick-negative in 24 hours and remained so for at least seven days, thereafter becoming gradually positive once more. It also indicates the difference between tests made with toxin dilutions of 1/1000 and 1/500 at periods of 7, 14, and 21 days after administration of antitoxin. Theoretically, at least, this serum was much more satisfactory than its predecessor.

* Part of a thesis submitted to the University of Aberdeen for the degree of M.D.

Case 1 was faintly positive when tested 14 days after immunisation and developed a mild attack of scarlet fever five days later. It is interesting to note that the area of skin on which the Dick tests had been made was not invaded by the rash, while it was surrounded by a bright erythematous ring of greater intensity than the eruption on the forearm. This phenomenon has been noted by Zingher,[1] who attributes the pale area of skin to the development of a local immunity in response to the Dick toxin, the surrounding ring of erythema being due to the sensitised condition of cells containing only a minimal amount of antibody to the scarlet fever toxin. Two further Dick tests were made on this patient on the second day of the eruption, one on the immune area of skin on the forearm, the other about two inches outside this zone. No reaction appeared at the site of the first, while the second was positive. A final re-test on the tenth day of illness was negative.

TABLE III.

Serum.—Type B; dose 2·5 c.cm.

No.	Age.	Re-tested in—						
		24 hrs.	7 days.		14 days.		21 days.	
			1/1000	1/500	1/1000	1/500	1/1000	1/500
1	5	0	0	±	+			
2	5	0	0	±	+			
3	5	0	0	±	0	±	±	
4	3	0	0	0	0	0	0	±
5	3	0	0	0	0	0	0	±
6	3	0	0	0	±			
7	2	0	0	±	±			
8	4	0	0	±	±			
9	1	0	0	±	0	+	±	
10	3	0	0	0	0	0	0	0

No other patient in this series developed scarlet fever while in hospital.

That 2·5 c.cm. of a concentrated serum is not always sufficient to keep patients Dick-negative for seven days is shown by Table IV., illustrating an experiment where that amount of two other concentrated sera (C and D) was given to 18 Dick-positive children in a diphtheria ward, 24 hours after the occurrence of a case of scarlet fever therein.

TABLE IV.

Serum.—Type C; dose 2·5 c.cm. *Serum.*—Type D; 2·5 c.cm.

No.	Age.	Re-tested in—				No.	Age.	Re-tested in—			
		24 hrs.	48 hrs.	7 days.	14 days.			24 hrs.	48 hrs.	7 days.	14 days.
1	3	0		0	0	10	6	+	±	+	
2	4	0		±		11	3	0		0	D.
3	3	+	±	+		12	4	±	0	D.	
4	4	0		0	+	13	4	0		0	D.
5	2	0		0	0	14	4	±	±	+	
6	5	0		+		15	4	+	±	±	
7	3	0		0	D.	16	2	0		0	0
8	3	0		+		17	3	0		0	D.
9	2	±	0	±		18	3	0		0	0

D. = Discharged.

Both these sera failed to make all the children in the respective groups Dick-negative in 24 or 48 hours, and eight of them were positive after seven days. Unfortunately some of these patients were discharged from hospital, so that re-tests in 14 days were impossible, but four out of five were still negative after that period. One of these, however, developed a mild attack of scarlet fever 21 days after the injection of antitoxin, but I am unable to say whether he had by this time become Dick-positive. Case 10, who did not become Dick-negative, was discharged from hospital 11 days after receiving antitoxin, but was readmitted ten days later on the fourth day of a mild attack of scarlet fever. A Dick test on this patient on the following day was negative.

In view of the comparative failure of these sera in a dose of 2·5 c.cm., a further trial was carried out with them in another diphtheria ward where a case of scarlet fever had just occurred. This time a dose of 5 c.cm. was used, and the results are shown in Table V. With the striking exception of Case 3 all these

TABLE V.

Serum.—Type C; dose 5 c.cm. *Serum.*—Type D; dose 5 c.cm.

No.	Age.	Re-tested in—				No.	Age.	Re-tested in—			
		24 hrs.	48 hrs.	7 days.	14 days.			24 hrs.	48 hrs.	7 days.	14 days.
1	5	0		0	0	6	5	0		0	D.
2	5	0		0	±	7	5	0		0	0
3	5	±	±	+		8	4	0		0	±
4	1	0		0	0	9	4	0		0	0
5	3	0		0	D.	10	3	0		0	D.

D. = Discharged.

patients became Dick-negative in 24 hours and remained so for at least seven days. Of six whom I was able to re-test in 14 days, four were still negative.

Case 3 originally gave a strongly positive reaction. Nine days after receiving antitoxin he developed a mild attack of scarlet fever. During the eruptive stage he showed blanched areas of skin at the site of the previous Dick tests, but no surrounding ring of erythema. A Dick test on the tenth day of illness was negative, while his blood serum, taken on the twenty-sixth day, gave a good Schultz-Charlton reaction.

Case 2 was discharged from hospital 18 days after immunisation, but was readmitted 28 days later on the third day of a moderately severe attack of scarlet fever. During her initial stay in hospital she had six Dick tests performed on the flexor surface of the right forearm, the skin of which now presented an unusual appearance. Over an oval area 5 in. long by 2 in. broad there was profuse desquamation, the underlying skin being deeply pigmented, while surrounding it was a bright erythematous ring. The rest of the forearm was invaded by a typical scarlet fever rash. Fourteen days later this area of skin looked quite normal, while typical desquamation was in progress over the remainder of both upper extremities. The mother of this child volunteered the information that the zone of skin described above had become a vivid red colour about a day before the rash began to appear on the neck and chest.

Brown[2] also noted this reappearance phenomenon in a few patients, but was unable to confirm Zingher's observation that in such cases the site of injection of Dick toxin presented a blanched appearance. He does not state, however, the time which had elapsed between the performance of the Dick test and the onset of scarlet fever, and it is here, I believe, that the explanation of this apparent discrepancy is to be found. In the two cases quoted by Zingher this interval of time was respectively four and seven days; in the first two which I have described it was respectively five and two days, while in the third instance it was 29 days from the date of the sixth test and considerably longer from that of the previous five. We may therefore say, I believe, that when scarlet fever supervenes within a few days of the performance of a Dick test, the area of skin affected is still immune and is accordingly not invaded by the eruption. When, however, a period of three to four weeks has elapsed, the skin of this part has passed from a state of immunity to one of hypersensitivity to the scarlet fever toxin, and the first cutaneous manifestation of infection occurs—in an exaggerated form—in these hypersensitive cells.

Conclusion.

In these experiments scarlet fever attacked only those patients who were not rendered Dick-negative or who became Dick-positive after a varying period of immunity. Unconcentrated sera were found to be of little or no value, while of three different concentrated sera one was sufficiently potent to keep ten patients Dick-negative for at least even days in a dose of 2·5 c.cm. This dose has to be doubled in the case of

[1] Zingher, A.: Jour. Amer. Med. Assoc., 1924, lxxxiii., 432.

[2] Brown, W. A.: Scarlet Fever, with Special Reference to Susceptibility by the Dick Intracutaneous Test, Brit. Jour. Child. Dis., 1925, xxii., 171.

the other two concentrated sera, and even then one patient remained Dick-positive.

I believe, therefore, that 5 c.cm. of a concentrated scarlet fever antitoxin is usually sufficient to protect susceptible contacts for a minimum period of seven days. It is probable, however, that a dose of 10 c.cm. is necessary in those who give a very strongly positive Dick reaction, although further evidence is required on this point.

I am indebted to Dr. D. MacIntyre, medical superintendent, Plaistow Hospital, for permission to record this work, and to Dr. R. A. O'Brien, of the Wellcome Research Laboratories, for supplying me with the necessary toxin and antitoxin.

IRRADIATED ERGOSTEROL IN THE TREATMENT OF RICKETS.

By R. AIDIN, M.D. Dub.,
LATE ASSISTANT MEDICAL OFFICER, ALDER HEY CHILDREN'S HOSPITAL, LIVERPOOL.

During the past decade there have been great advances in the treatment of rickets, advances in part empirical and in part founded on recent progress in the theoretical knowledge of the disease. Treatment is in a condition of flux; a few years ago the value of a diet rich in antirachitic vitamin was stressed; last year actinotherapy was hailed as the ideal; to-day, the oral administration of artificially prepared concentrated antirachitic vitamin is being tried and bids fair to become the standard treatment of the future. Rickets can be cured by many different means; antirachitic diet, cod-liver oil, heliotherapy, actinotherapy, and the oral administration of concentrated antirachitic vitamin have all been used. The length of time necessary to effect a cure differs widely according to the method of treatment, the patient's age, and idiosyncrasy. The rapidity with which a cure can be effected is important, for not only is the child's period of invalidism shortened and the risk of intercurrent disease due to lowered resistance reduced, but the danger of deformities is minimised.

That rickets is caused by a deficiency in the body of the antirachitic vitamin D is now generally agreed. Both the antirachitic vitamin and ultra-violet light can protect against rickets. The vitamin must be included in the food; ultra-violet light, whether natural or artificial, can act either through the food or directly on the body. The light acts on the pro-vitamin contained in the food or else on the pro-vitamin normally present in the cutis vera, converting it into the active antirachitic vitamin.[1]

Ergosterol, a sterol originally prepared from ergot, is widely distributed. The recent work of Rosenheim and Webster[2] has shown that after irradiation ergosterol becomes very powerfully antirachitic. The work of these observers suggest that ergosterol is the pro-vitamin and that irradiation converts it into the actual antirachitic vitamin. The British Drug Houses prepare a suspension of irradiated ergosterol and call it "Radiostol." This preparation was used in the treatment of the patients described in this paper. Their general condition improved concurrently with the radiological evidence of healing of the epiphyseal lesions, although deformities were not improved.

Radiographic Evidence of Cure.

It is difficult to appraise the curative properties of any particular method of treatment. In the following observations reliance has been placed on radiograms of the wrist, both in diagnosis and in determining the cure. E. Mellanby[3] has shown that radiograms present a true criterion of the disease in animals. In order to make a comparison possible between the results of different methods of treatment an attempt has been made to keep uniform the standard of diagnosis and cure. In children the clinical cure is always, I think, preceded by the healing of the bony lesions. This process may be visualised in serial films taken at frequent intervals. It must be borne in mind, however, that the radiological evidence of healing of the bony lesions is not always followed by a clinical cure, for after calcification of the epiphyses is complete, the square head, bowed legs, and enlarged radial epiphyses not infrequently remain, and may persist for many months. Apart from these gross stigmata, the clinical improvement that follows the process of healing, visualised in serial radiograms, is very striking. A child suffering from active rickets adopts the motionless Buddhaesque pose and contemplative mien of the saint; a radiogram of the wrist shows active rickets. After a few weeks' treatment by one of the newer methods the child becomes active and lively, jumping about in his cot and keeping up a continual chatter of baby talk; a radiogram now shows that healing is well advanced.

The earliest structural changes that occur in rickets take place in the cranial bones and at the costochondral junctions; at the present stage of radiographic technique these cannot be photographed. The radiogram of the wrist shows changes only when the disease has passed its earliest stage; the first signs are slight fuzziness at the distal end of the ulna followed by splaying of the distal end of the radius and accompanied by a varying degree of osteoporosis. In the more advanced stages both the epiphyses and the diaphyses are affected. The former is smaller than normal, more irregularly ossified, and separated from the diaphysis by an abnormally wide and ill-defined zone of proliferation. The end of the diaphysis is broader than normal and shows evidence of disordered and irregular growth. It may show cupping and fraying. The medullary cavity is wide and translucent to the rays. Healing is shown by the increasing density of the bone shadow, the ossification of the epiphysis, the filling-in of the concavity at the end of the diaphysis, and finally by the thin white line characteristic of healed rickets.

Clinical Records.

The dose of radiostol used at first was three minims thrice daily; later it was increased to ten minims thrice daily, administered in a suspension of mucilage. None of the patients showed any signs of intolerance. No cod-liver oil was given; the patients were treated indoors in a hospital ward.

Case 1.—On admission this patient, a male infant aged 1½ years, showed clinically active rickets. A radiogram of the wrist showed slight fuzziness of the distal end of the ulna and splaying of the end of the radius, together with slight osteoporosis—conditions indicating early rickets. Three weeks after the commencement of treatment with radiostol a radiogram showed definite evidence of healing, increased density of the bone shadow, and clear definition of the ulna and of the radial epiphysis. During the treatment the general condition improved markedly and the infant gained weight rapidly.

Case 2.—On admission this patient, a girl aged 1 year and 8 months, suffered from active rickets. A radiogram of the wrist showed moderately severe bony lesions. A radiogram taken four weeks after the commencement of treatment showed that healing had occurred.

Case 3.—On admission this patient, a boy aged 1 year and 9 months, suffered from active rickets. A radiogram showed very severe bony lesions at the wrist, indicated by cupping and fraying of the ends of the diaphyses of the radius and ulna. A radiogram taken eight weeks after the commencement of treatment showed that the bony lesions were almost healed. The child's general condition also improved.

Case 4.—When admitted this patient, a girl aged 3 years and 9 months, suffered from active rickets and a marked varus deformity of the lower limbs. A radiogram of the wrist showed moderately severe rickets, indicated by splaying and fuzziness of the ends of the diaphyses of the radius and ulna, and a marked degree of osteoporosis. A radiogram taken six weeks after the commencement of treatment showed that the bones were almost normal in consistence. The child's general condition had improved, but the deformities of the lower limbs were practically unaltered.

Case 5.—On admission this patient, a boy 3½ years old, showed very marked lateral bowing of both tibiæ. A

radiogram of the wrist showed very severe rickets. He was given massage and daily moulding, immobilised with Liston splints, and treated with radiostol. Six weeks after the commencement of treatment there was definite radiological evidence of healing which was completed four weeks later. The bony deformities of the legs, however, were practically unaltered.

The last two cases are instructive, as they illustrate an incorrect method of treatment. These patients, who both showed marked deformities, ought to have been given no specific antirachitic treatment until the deformities were cured. All clinicians who make a routine radiological examination are aware that active and severe rickets is not infrequently present in a patient suffering from marked deformities. It is a mistake to treat such a patient with any method that rapidly produces calcification of the bones, for the deformity is thus stabilised, the natural curative process of growth is retarded, the corrective effect of massage and moulding is decreased, and osteotomy is more often necessary.

The Time Element.

For comparative purposes the results obtained at Alder Hey Hospital by other methods of treatment are of interest. It was found [4] that cod-liver oil and malt and antirachitic diet effected a cure in a radiologically severe case in approximately 15 weeks; exposure to the rays of a carbon-arc lamp, in addition, did not appreciably hasten healing; exposure to the rays of a tungsten-molybdino-cored carbon arc, in addition to cod-liver oil and diet, effected a cure in approximately nine weeks; while exposure to the rays of a new mercury-vapour lamp and the administration of irradiated cholesterol,[5] with cod-liver oil and diet, together effected a radiological cure in approximately five weeks. Several of the patients treated with radiostol received too small doses at the commencement of the treatment.

Actinotherapy in the treatment of rickets is rapidly becoming a thing of the past; for in irradiated ergosterol the pædiatrician possesses a potent antirachitic agent, more effective than cod-liver oil, and, when administered in sufficient doses, probably more effective than artificial ultra-violet rays, and certainly simpler and more economical in practice.

I wish to thank Lieut.-Colonel P. Macdiarmid, M.D., medical superintendent of Alder Hey Children's Hospital, for permitting me to publish these cases.

References.

1. Aidin, R.: Practitioner, July, 1927.
2. Rosenheim, O., and Webster, T. A.: THE LANCET, 1927, i., 306, and ii., 622.
3. Mellanby, E.: Med. Research Council Report, No. 61.
4. Crosbie, W. E., and Aidin, R.: Brit. Med. Jour., 1927, i., 960.
5. Aidin, R.: Brit. Jour. of Actinotherapy, May, 1927.

Clinical and Laboratory Notes.

TWO CONSECUTIVE ABDOMINAL PREGNANCIES.

BY MILLICENT V. WEBB, L.R.C.P. & S. EDIN.,
WOMEN'S MEDICAL SERVICE FOR INDIA; PRINCIPAL, WOMEN'S MEDICAL SCHOOL, AGRA, INDIA.

THE following case appears worthy of note, as two consecutive abdominal pregnancies in the same patient must be extremely rare.

A Hindu woman, aged 35, was admitted to the Maternity Hospital, Agra, on March 1st, 1924, complaining of enlargement of abdomen and amenorrhœa for one year, followed by blood discharge for one month. Eight children; two alive. Last child two years ago.

On examination the abdomen was found to be enlarged by a tumour the size of a full term pregnancy; tumour was very hard in places, but definite fœtal parts were not palpable, owing to rigidity of the abdominal muscles. No fœtal heart sounds were heard. On vaginal examination the tumour was found to extend into the pelvis, which appeared to be filled with a soft solid mass. A provisional diagnosis of ovarian tumour was made.

On opening the abdomen on March 4th a thick wall, like that of a malignant ovarian cyst, presented. A child's foot was felt through a thinner portion of the sac, and a dead full term child was removed. The child had obviously been dead for some time; the placenta, situated in the lower abdomen and pelvis, was partially dried up and thus easily shelled off. Probably the history was correct and the child had been dead three to four months. Oozing was stopped by adrenalin solution. Much of the sac had to be left *in situ*; its edges were drawn together in the lower part of the wound, and tube and packing were inserted. The abdomen was closed, except in the lower 2 inches, by through-and-through silkworm-gut stitches. On March 5th the packing was removed and tube changed under chloroform. The tube was left out on the seventh day, and patient was discharged cured after three weeks.

On June 4th, 1926, the same patient was again admitted into the Maternity Hospital, complaining of pain in the back and lower abdomen. It happened that every member of the staff who knew her history was on leave. As she gave a definite history of a child taken out per abdomen, and as Cæsarean sections are extremely common, her old notes were not looked up. She said she was about seven months pregnant, had had strong pains for three days, and had felt no fœtal movement after the pains stopped.

On examination the uterus appeared enlarged to the size of a 6½ months pregnancy; os closed, cervix soft, pulsation in the fornices. Fœtal parts not distinctly felt; this may have been due to thickening from the old sac. There was no indication for immediate emptying of the uterus. Patient left hospital after six days, and was told to return.

On Nov. 15th, 1926, patient was admitted into the gynæcological ward with a history of pain in the abdomen, and offensive, blood-stained, purulent vaginal discharge for three months following amenorrhœa. She gave no history of having been in the maternity ward in June, but was recognised as having had an abdominal pregnancy two years previously, and her old notes looked up. There was slight fever. On examination a mass was felt reaching to the umbilicus, hard and tender, very slightly movable. On vaginal examination a large, hard uterus was felt, surrounded apparently by a mass of inflammation, and adherent to the old scar; purulent discharge from the cervix, but no suggestion of a collection of pus, or any indication for operation. Diagnosis of chronic inflammation was made, probably originally due to an infection of the portions of sac which had been left after the operation. Patient was treated on the usual lines, but only remained ten days in hospital as she felt better and discharged herself.

On March 15th, 1927, patient was admitted into the septic surgical ward for a discharging sinus in the abdomen. She refused any operation and left at once.

On April 4th, 1927, she was readmitted as a septic surgical case. There was thick, very offensive pus discharge from the old scar and the inflammatory mass below it. On the 8th an incision was made and the sinus investigated. The first thing which appeared was the humerus of a five months fœtus. The rest of the bones were removed and the cavity carefully swabbed out and drained. On the third day a fæcal fistula developed; this persisted for about a month, but finally closed, and on May 26th the patient was discharged cured with wound completely closed.

This case illustrates well the difficulties under which work is done in India, where patients refuse treatment and take their own discharge, and there is no antenatal organisation. At the first operation it was not possible to disturb the parts to find out which tube had ruptured, and the patient insisted on going out directly the wound healed before the pelvic organs could be separately palpated bimanually. I did not see her again till she appeared two and a half years later with a hard inflammatory mass reaching to the umbilicus, giving no history of pregnancy subsequent to the operation or of having been in the maternity hospital five months previously.

Full term abdominal pregnancies are comparatively common in India. During 17 years' operative work in women's hospitals in Delhi, Calcutta, and Agra I have had four. The first was full term with a live child. On abdominal inspection the outline of the child's fingers could be seen beneath the abdominal wall; in this case the pregnancy had occurred first in the left tube and secondarily in the broad ligament, from which it had ruptured into the abdominal cavity; the placenta was folded on itself and almost

pedunculated, and was easily tied off. The child had double talipes and marked torticollis; though delivered with pulsating cord it did not live. The mother, who had been doing hard labour as a coolie woman all through her pregnancy, made an uninterrupted recovery.

The second case, also full term, came in with false labour pains; abdominal pregnancy was diagnosed, and I operated instead of waiting as I now should. The thinned-out placenta was attached to the whole anterior abdominal wall, from costal margins to pubes, and the patient died on the table from uncontrollable hæmorrhage.

The third fœtus had been dead some months and had a thick sac very similar to the case first described. Recovery was uneventful.

A CASE OF
LABOUR WITH COMPLETE OCCLUSION OF THE EXTERNAL OS.

By E. O. Croft, M.D. Durh., M.R.C.S. Eng.,
SENIOR SURGEON, HOSPITAL FOR WOMEN, AND OBSTETRIC SURGEON, LEEDS MATERNITY HOSPITAL;
AND
A. M. Claye, M.D. Leeds,
TUTOR IN OBSTETRICS, UNIVERSITY OF LEEDS; AND RESIDENT MEDICAL OFFICER, LEEDS MATERNITY HOSPITAL.

CASES of occlusion of the cervix uteri during labour are of sufficient rarity to be worthy of record, and the following is an interesting example.

The patient was admitted to the maternity hospital on August 5th, 1927, after a car ride of over 40 miles. She was a 4-para who had had three previous normal labours. On admission the pulse-rate was 88, temperature 98·4° F., and general condition good. She had been in labour since the previous afternoon. On abdominal examination the vertex was found presenting in the left occipito-anterior position, the head being deep in the pelvis and well flexed. On vaginal examination the head was found to be completely covered by the distended walls of the cervix. There was a slight linear mark about half an inch long in the most dependent part, but no opening whatever. A crucial incision, with its centre over the mark, was made; the liquor amnii at once escaped and the head was felt. Complete dilatation rapidly followed and a stillborn female child, deeply stained with meconium, was easily delivered with forceps. The cervix was sutured with catgut, leaving an opening in the centre.

On discharge from the hospital the cervix appeared normal and duly patent.

The patient had a history of prolapse, the cervix (?) coming outside the vulva, during early pregnancy. The probable explanation is that ulceration of the prolapse with healing and contraction took place after conception.

A good account of the complication is given by Spiegelberg,[1] who refers to the old term "conglutinatio orificii externi" of Naegele, and distinguishes the results of cicatricial inflammatory closure from those due to a collection of inspissated epithelium in which no scar tissue is present. The latter condition can be easily broken through without incision. R. Barnes[2] reports a case in which the os was completely closed by cicatricial tissue contracting concentrically. Severe labour pains failed to open it. He incised the centre of the scar and nicked freely all round. The cervix expanded with wonderful rapidity as soon as the unhealthy tissue was divided. In cases of stenosis without complete occlusion the dilatation of the cervical walls occurs mainly at the expense of the anterior wall, so that the small external os is displaced high up and backwards. In the present case the posterior wall was relatively more distended, and the small scar was easily accessible below and in front. In the case of a young primipara under my care (E. O. C.) some years ago there had been primary elongation of the cervix, and where labour had been prolonged many hours no cervical aperture could be detected. Under anæsthesia, however, a minute depression was found high up and looking backwards. A small surgical probe penetrated this, and the opening was gently drawn down and held in a more correct position relative to the uterine axis. Dilatation and delivery proceeded rapidly and normally. This was probably a condition of "conglutinatio" (Munro Kerr illustrates a similar case[3]). In both my cases the "wonderful rapidity" mentioned by Barnes was very striking.

[1] O. Spiegelberg: Text-book of Midwifery, New Syd. Soc. Trans., 1888, ii., 134.
[2] R. Barnes: Lectures on Obstetric Operations, 1876, p. 92.
[3] Munro Kerr: Operative Midwifery, 1908, p. 202.

TREATMENT OF OBESITY BY ULTRA-VIOLET RAYS.

By C. L. Williamson, M.R.C.S. Eng.,
AND
C. H. Broomhead, M.D. Manch., M.B., B.S. Lond.

WE hope that the following details may be of interest to medical men who include ultra-violet light in their therapeutic armament. Dr. Howard Humphris in his admirable text-book "Artificial Sunlight and its Therapeutic Uses," makes the following remark:—

"I do not recommend the treatment of obesity by ultra-violet light. Electricity has other and better means at its disposal than this; but, as it is a state of disordered metabolism, accompanied by superfluous deposits and various functional disturbances, it is interesting to note that an agent such as ultra-violet light, which profoundly and beneficially affects metabolism, does so in a disorder which is so basically metabolic."

Conclusive evidence of the beneficial effects referred to by Dr. Humphris is given in the following case.

Our patient was an obese man aged 52 years; his personal habits were temperate. His occupation required him to travel a great deal, and he seized every opportunity of walking, but no reduction in weight resulted. He complained, apart from the "burden of the flesh," of dyspnœa and palpitation. There was a slight increase in the area of cardiac dullness to the left. No bruits were detected. The blood pressure was normal for his age and there was no protein in the urine. Numerous extrasystoles were present. His course of ultra-violet irradiation consisted, in all, of 49 exposures, the first ten being given twice weekly and the remainder, owing to the pressure of his business engagements, once a week. For each dose he was stripped to the waist only. The first 28 irradiations were administered by the tungsten arc with the mirror reflector and began with an exposure of three minutes each on the back and front of the body at a distance of 18 in. from the electrodes, gradually increased to a maximum of eight minutes each, back and front, at the same distance. The twenty-ninth to the forty-ninth doses were all given with the air-cooled "Uviator" lamp made by Messrs. Kelvin Bottomley and Baird, and ranged from an initial exposure of three minutes each, back and front, at 24 in., to five minutes at 12 in., the ammeter registering 2·75 amps. The result was interesting. After the thirteenth dose the extrasystoles vanished and did not return. The alteration in weight was even more noteworthy. The weighing was carried out by the patient himself, a very intelligent man, upon the same pair of scales which were tested at frequent intervals. He was weighed in the same clothing and at the same time of day at weekly intervals. Before treatment he scaled exactly 238 lb. After the first six doses he had dropped to 230 lb. The twenty-sixth dose had reduced him to 212½ lb. From the twenty-seventh to the forty-ninth applications he received, in addition to the light, a mild weekly dose of faradism, applied chiefly to the abdomen. At the conclusion of treatment his weight had fallen to 194½ lb., a loss of 43½ lb. in all. The decrease was not invariably progressive. On four occasions there was a gain over the weight of the previous week, but never of more than one pound, and on five occasions the weight was unchanged. No special dieting was carried out nor were any drugs, except a simple "after-dinner" aperient pill, taken. The general health improved progressively, and the patient cheerfully purchased new suits of clothes as his old ones fell, in more or less graceful folds, upon his body. His 19-inch collar was replaced by one of 17½ in. Three months after his last visit to us his weight was 193½ lb. and he was feeling remarkably well.

The title of this article may be objected to as misleading, since electricity was also employed. It is, however, to be noted that before faradism was applied

he had already lost 25¼ lb. in weight. So far as we are aware the principal modern treatment of obesity by electricity alone is by the Bergonié method, which involves rather costly apparatus. It is, of course, not to be inferred that ultra-violet light is an infallible remedy for adiposity, but we suggest that it is feasible, pleasant, and harmless. We feel convinced that better results have been obtained by other actinotherapists, and it would be of interest if they could be recorded.

Liverpool.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

AT a meeting of this Society held on Jan. 27th Sir HUMPHRY ROLLESTON, the President, took the chair, and Dr. DAVID NABARRO opened a discussion on the

ANTENATAL TREATMENT OF SYPHILIS.

It did not come within his province, he said, to see women during and immediately after gestation, and to present the material needed for his purpose it had been necessary for him to read through a great deal of the work of others. Since doing so he had become aware of the valuable article recently published on the subject by Boas, of Copenhagen.

It was only comparatively recently that the attempt to prevent congenital syphilis by treating the mother during pregnancy had been revived; no reference was made to it, for instance, in the large work on syphilis by D'Arcy Power. Three groups of cases should be borne in mind. In the first group were people infected with syphilis who wished to marry. No one so infected should be allowed to marry unless two years of adequate treatment, dating from the primary sore, had been received; and even then consideration must be given to a number of other factors. In the second group were those who contracted the disease after marriage, symptoms showing themselves in either partner. In these circumstances both partners should receive energetic treatment, for their own sakes and for that of probable offspring. The mother should be warned against conceiving a child sooner than six months after commencing treatment. If she was already pregnant there should be no delay in beginning antisyphilitic measures. The third category comprised those women who, though presenting few or no signs of the disease, gave a history of one or two miscarriages. They should be treated as soon as possible in the pregnancy and should have similar attention at each succeeding gestation.

The first centre in this country for treating venereal disease had been established by John Adams in Thavies Inn, and there the antenatal treatment of syphilitic mothers was very successful, the last 37 women treated having given birth to 37 living infants. Without following up the cases further it could not, however, be said that all these children were free from infection. The statistics of J. W. Williams, of Johns Hopkins Hospital, showed that syphilis appeared in 49 per cent. of the offspring of 169 untreated pregnant women, in 39·2 per cent. of those of 102 inefficiently treated women, and in 6·7 per cent. of the children whose mothers, 179 in number, had been properly treated during pregnancy. Hence it was clear that even efficient treatment of the mother did not make it certain that the issue would be a healthy child. It must also be remembered that though a placenta looked healthy, the child might be syphilitic. The percentage of syphilitic children born after the mothers had been efficiently treated, taken over a series of years, varied between 3·7 and 7·7.

Methods of Treatment.

The older practitioners, said Dr. Nabarro, had the choice of using either mercury or iodide of potassium. Some preferred not to treat the mother during pregnancy because they feared abortion. Salvarsan, or its substitutes, seemed best, though Boas and his colleague Gammeltoft considered that the best results in their hands followed the use of silver-salvarsan. Whatever drug was chosen the great need was that the treatment should be efficient. Most of Dr. Nabarro's cases had had novarsenobillon. Boas supplemented the silver-salvarsan by mercurial inunction; he gave six or eight injections of silver-salvarsan, and after a month's rest from treatment a further course, with mercurial inunction. Another rest brought the patient to the middle of the pregnant period, the time when, it was generally agreed, the spirochætes began to wander through the placenta and infect the fœtus. At such a time there should be an access of energy in the treatment. Dr. Nabarro said he had been content to treat expectant mothers who came to him on the same lines as an ordinary case—i.e., by giving weekly injections of N.A.B. with examination of the urine before beginning treatment, and at monthly intervals to make sure that the kidneys were working properly. Tartar and sepsis of teeth or mouth must always be put right. For pregnant mothers he started with only 0·3 g. of N.A.B., working up to 0·6, and the course was repeated as often as possible during gestation. If oral administration of mercury was found to do as much good as injections it should be adopted in preference as it was more convenient. With regard to treatment in succeeding pregnancies, it must be borne in mind that, even in the absence of treatment, the intensity of the syphilitic infection seemed to diminish, so that after repeated gestation the tendency was for the offspring to be born healthy. Still, a woman could give birth to a syphilitic child 20 years or more after her one infection with the disease; in one case this happened 37 years afterwards, the disease in that case having been contracted in childhood. Dr. Nabarro raised the interesting question whether treatment of mothers during pregnancy might prolong the period during which they could give birth to syphilitic children. Often only a small amount of treatment of the mother had been found to ensure that her child should be healthy. Prof. F. J. Browne and others advocated the compulsory notification of pregnancy. Possibly that might come sometime in the future as a result of education, but the speaker thought there would be grave objections to it at the present time. Much could be done by the establishment of sufficient V.D. clinics for pregnant women in all large cities, and help could be given by maternity and child welfare centres.

Colonel L. W. HARRISON devoted his attention to the question whether it was worth while to make a bigger effort than at present to reduce the incidence of congenital syphilis by the antenatal treatment of expectant mothers, and, if so, along what lines that effort should be directed. There was now available overwhelming evidence that if it were possible to place every syphilitic pregnant woman under treatment, congenital syphilis would almost vanish. Whatever amount of treatment such mother might have had before pregnancy she should be treated during pregnancy. It had been calculated that 16 per cent. of stillbirths were due to syphilis, and for the seven years 1920–26 there were 25,000 stillbirths in this country. The Departmental Committee on the Causes and Prevention of Blindness concluded that syphilis was the direct cause of 10 to 15 per cent. of the blindness at present existing in this country, while many other cases of sight failure were due to degenerative changes consequent on vascular disease of possibly syphilitic origin. In March last 46,822 blind persons were registered in England and Wales—i.e., "too blind to perform work for which eyesight is essential." 16,000 syphilitic pregnant women per annum stood in need of treatment, but nothing like this number were being treated. Colonel Harrison's

main contention was that a much greater amount of treatment must be carried out than at present by the practitioners who discovered the syphilis in the first instance; the women had confidence in their own doctor, whereas V.D. specialists were unknown to them.

Discussion.

Dr. A. C. ROXBURGH gave some figures from a small antenatal clinic in Battersea with which he had been connected for some years. As a result of the treatment of syphilitic pregnant women during the period of gestation, the proportion of positive Wassermanns among them had steadily diminished. In 1924 it was 3·5 per cent., in 1925 2·1, in 1926 it had fallen to 1·5. Of 41 syphilitic women so treated only three showed any outward evidence of syphilis, so that the diagnosis had to rest entirely on the result of the Wassermann test. The treatment he carried out was a weekly injection of N.A.B. for eight weeks, continuing thereafter fortnightly, to the accompaniment of mercury pills throughout.

Dr. T. ANWYL-DAVIES submitted a series of statistics of cases of syphilitic expectant mothers treated at the V.D clinic at St. Thomas's Hospital. Before antenatal treatment was established, of 739 pregnancies 50 per cent. produced children who were unhealthy. 300 syphilitic expectant mothers were put on to treatment and only 9 per cent. of the offspring were unhealthy. Even one course of treatment greatly reduced the severity of infection in the child. He firmly believed that if once a woman became syphilitic she was liable at every subsequent pregnancy to produce a syphilitic child. The old idea that the treatment increased the risk of post-partum hæmorrhage had been shown to be a myth. At St. Thomas's, where the department had its own lying-in ward, there had been no instance of post-partum hæmorrhage in eight years.

Dr. DOROTHY LOGAN said that once she saw good reason for putting a woman upon antisyphilitic treatment she did not discontinue or modify it because of pregnancy. Usually she was content to give seven injections of N.A.B., but mercury was continued much longer, and potassium iodide was given in gradually increasing doses.

Dr. MARGARET RORKE said the average amount of treatment given to pregnant syphilitic women before 1920 was inadequate. In her view the ideal means of treatment was a combination of 914 with mercury. Occasionally a woman could not tolerate arsenic, and in those cases bismuth was substituted. In her clinic examination of the urine was made before each injection, and if there was an indication of toxæmia intermediate treatment was carried on for a time. More treatment and a longer period of supervision would be needed before she could be satisfied that her work would stand inspection in 15 years' time.

Dr. F. FOWLER WARD had also noticed that at subsequent pregnancies syphilitic mothers often gave birth to healthy infants. Yet his practice was to induce all syphilitic mothers to receive treatment at each pregnancy. In those who had had syphilis for some years he could seldom obtain a negative Wassermann.

Dr. DENNIS VINRACE did not see the need for placing pregnant syphilitic women in a separate category. He did not think that compulsory notification of pregnancy would be acceptable.

Dr. T. J. WRIGHT spoke of the preference of some practitioners for the intramuscular and deep subcutaneous methods of giving the arsenical preparations, as they were supposed to be better than the intravenous method.

Reply.

Colonel HARRISON replied that during the war subcutaneous injection was found to be more effective than intravenous; it was 12 per cent. better in separate series of 200 cases.

Dr. NABARRO, in reply, said he considered that intramuscular treatment often gave better results than intravenous, both in adults and in congenital syphilis in children. But the intravenous was the less painful, and it was not uncommon for patients, especially young ones, to complain of pain at the site of the intramuscular injection on returning home. It would be generally agreed that the Wassermann being positive meant the presence of living spirochætes in the body, though whether they were necessarily causing harm was open to question. He agreed it would be very difficult to bring about notification of pregnancy, whatever good practical results might be expected from it, as mothers would be naturally diffident about proclaiming the fact. The great difficulty in this matter lay in following up the cases. Some of the obstacles in the way of bringing patients to the hospital again were real ones, as in cases of poor people living 20 miles in the country; also, a woman advanced in pregnancy shrank, as a rule, from being much in public.

TUBERCULOSIS SOCIETY.

AT a meeting of this Society held on Jan. 20th there was a discussion on the

Work and Aims of Tuberculosis Care Committees and Kindred Agencies.

Dr. GEORGE JESSEL said that he had been actively concerned in the establishment of nine care committees and in the administration of other forms of public assistance. Since the first committee of this kind in Lancashire was established in 1913 their scope and function had become narrower, many of their activities having become part of the ordinary dispensary routine. The work of dispensary medical officers and nurses was in itself a most important form of care work, including as it did sympathetic instruction and encouragement of patients and their families, as well as the provision of many necessary articles, such as sputum flasks. In spite of the numerous other public sources of assistance available for poor consumptives and their families, he thought there remained a good deal of scope for the activities of care organisations. If, however, these were to be really efficient, they must have accurate information both about the medical condition of the patient and about his social and financial circumstances. This information it was the function of the tuberculosis officer and of the tuberculosis health visitor to supply, and the dispensary should be the centre of all care activity, in order to ensure proper coördination of the help given to each family.

Dr. Jessel's own area had a population of 339,704, of whom, at the beginning of 1927, 1908 were under dispensary supervision. The Lancashire care committees included representatives of district councils, boards of guardians, trade-union organisations, employers' organisations, local health officials, and other individuals known to be interested in social work. Theoretically it was not difficult to secure a membership which was nominally representative, but in practice it was not always possible to maintain its representative character, one great hindrance being the dominance of one political party, which resulted in keeping away those of opposite views. Care committees were better without advanced politicians.

The existence of care committees, he thought, relieved the tuberculosis officer of the responsibility of acting as a relieving officer, and while the tuberculosis officer must keep in constant touch to prevent the committee from running off the rails for want of proper guidance, yet the committee must be made to realise that it was ultimately responsible for its decisions. The committees acted also as educational centres, and in many cases they had organised lectures by the tuberculosis officer, thus assisting in the larger campaign against the disease. One of the avowed objects of the work was to give temporary assistance and to prevent patients and their families from becoming chargeable to the local board of guardians, which was economically unsound, apart from questions of sentiment. If the assistance required was very great, the case might have to be referred to the

relieving officer. It was not well enough known that a poor-law medical officer might sanction extra nourishment to the sick poor. Among the more valuable ways in which help was provided by care committees was the loan of bedsteads and mattresses. Sleeping arrangements in infectious cases had steadily improved within the last ten years, in spite of the overcrowding. The most difficult problem was to find work for patients, especially now that trade was so bad; a patient must usually be fit in order to do a full day's work regularly. Figures for Dr. Jessel's own area last September showed that of 526 pulmonary patients under active medical supervision by the tuberculosis officer, 248 were unfit for work, 208 were working, and 70 (13 per cent.) were out of work although considered fit for it. It was wise, if possible, to place patients in occupations bearing some relationship to those with which they were familiar. As a rule, what mattered most was not the job but the conditions under which it was done.

Dr. A. P. FORD pointed out that the work of a care committee in a county area necessarily differed in many respects from that of a large city or town. The patient to be cared for should be known personally to those trying to help him, and this object could not be attained by the creation of one committee for the whole county. The difficulty had been met in Hertfordshire by the appointment of one or more influential persons in various urban and rural localities who were willing to undertake the work, while the only after-care committee functioned in the largest borough of the county. It was much easier to get things done promptly when one individual was responsible than when the matter had to be referred to a committee. Dealing with the duties of a care committee or care worker, Dr. Ford said that while it was a great advantage to have a small fund at their disposal, he thought that this fund should not be used for providing nourishment or necessities. Such provision was the duty of the board of guardians or the local authority. It was usually easy in these days to persuade a patient to apply for assistance from the relieving officer, and it was to be hoped that as a result of impending changes in the legislation regarding boards of guardians, the system of granting outdoor relief to sick persons unable to follow their occupation would be so simplified that every genuine case would receive adequate and immediate assistance. With regard to tuberculous patients, however, much closer coöperation would be necessary between the relieving officer and the tuberculosis officer if this object was to be attained. The fund at the disposal of the care workers could be used to great advantage in providing extra clothing for patients, assisting to pay for domestic helps, in paying for structural alterations to improve unsuitable home conditions, and in many other ways which would not come under the functions of the board of guardians, such as rendering assistance to the family when the mother developed tuberculosis. Care workers visiting the homes of tuberculous patients should be careful not to take on the function of the official health visitor, such as the search for contacts, which was part of the duties of an officer who had been trained in such work. Discussing the question of employment of ex-sanatorium patients, Dr. Ford said that mothers of families provided the most difficult problem of all, and it was with this class of patient that the assistance of the care worker was most urgently needed. The work of a housewife with a young family was probably the most unsuitable occupation for a tuberculous patient. He did not recollect any case of arrest of the disease in a mother of a working-class family, with tubercle bacilli in her sputum, who had to return to the care of her household on discharge from the sanatorium. Drugs and extra nourishment were of no avail unless some arrangement could be made whereby the mother was relieved of the majority of her duties and worries. With regard to ex-Service men, Dr. Ford said that he had never come across a pensioner who had been able to earn an adequate living, outside an institution, by means of a new occupation he had been taught as a result of a stay of 12 months or so at one of the various training colonies.

Miss K. LEWIS (Public Health Department, L.C.C.) contributed a paper, read in her absence by Dr. G. T. HEBERT, on the work and aims of tuberculosis care committees in London. There were, she said, 26 borough care committees, most of which were doing useful and constructive work, up to the standard desired by the London County Council. In three other boroughs the functions of the care committee were performed by a health worker or almoner. The L.C.C. had laid down a scheme for the guidance of care committees, and Miss Lewis discussed this with special reference both to the ways in which the committee should receive its information about patients and the kind of assistance which it could provide. The arrangements about assessments for residential treatment were also gone into. No contribution was assessed in respect of any insured person whose income was the main support of the family and would be sensibly reduced while he was undergoing treatment, or in the case of an ex-Service man in respect of whom the Ministry of Pensions defrayed the cost of treatment. In the case of children, a small contribution, roughly equivalent to the cost of maintenance of the child at home, was assessed if the circumstances appeared to justify the demand. In no case, however, was the provision of treatment delayed until an assessment had been made.

A recent departure, said Miss Lewis, which might in time come to rank as one of the most important duties of the care committees, was the organisation and management of handicraft classes. These classes, which entailed no expense to the dispensary service, were intended for patients discharged from sanatoriums after treatment who were anxious to take up work but were physically unfit to compete in the labour market. The value of the work lay rather in providing the patients with a new interest and occupation than as a means of earning money, but the proceeds of the sale of the articles covered at least the cost of production. Three such classes had been started successfully, two more were beginning this month, and four were in process of organisation.

Discussion.

Dr. S. VERE PEARSON said that the main problem was economic. He agreed that the housewife was the most difficult type of patient to deal with, and this was true not only of the insured class but also of middle-class patients.

Dr. N. DONNELLY thought that two of the most useful ways in which care committees could help was in the supply of home helps, and in the boarding out of children from infected homes.

Dr. G. MACDONALD wished to stress two points. First, that the person who dealt with the care committee should be the secretary of the dispensary and should be a paid official. No case ought to come before the care committee without the knowledge of the tuberculosis officer. Secondly, there ought to be more coöperation between tuberculosis officers and the heads of hospitals. It was better if the communication could be direct. He thought the care committee ought not to have control of large funds, but should have a small fund for emergencies.

Other speakers referred to the great help received from the Charity Organisation Society and the Invalid Children's Aid Association, through which much of the work of the care committees in certain areas was carried on. One or two speakers thought care committees were unnecessary, at least in rural areas, where the work could be better done by tuberculosis officers and their assistants. A care committee would only duplicate the work, and it was suggested that the Ministry of Health should not be encouraged to press these committees on all districts, irrespective of the local conditions.

MEDICO-LEGAL SOCIETY.

AT a meeting of this Society held on Jan. 26th Sir WILLIAM WILLCOX, the President, took the chair, and Mr. F. LLEWELLYN-JONES read a paper on

DRUNKENNESS AND CIVIL AND CRIMINAL RESPONSIBILITY: A STUDY IN COMPARATIVE LAW.

He reviewed the laws relating to civil and criminal responsibility of intoxicated persons in different countries, most of which corresponded with the English custom, as summarised in Lord Halsbury's "Laws of England." The Code Napoléon had no specific reference to the civil problem, but French courts had arrived at decisions which regarded the very drunken man as insane; they had, however, accepted no lesser state of inebriation as a reason for relieving him from his contract, unless the other party had resorted to fraudulent devices to make him drunk. Agreements entered into in taverns might be annulled within 24 hours in France, and in Holland and Flanders they were regarded as invalid unless ratified within 24 hours. Recent Austrian and German legislation had enacted that if a man were made drunk through trickery, so that a wrong resulted, then the third party who had made him drunk should be liable to the injured person.

Criminal Responsibility.

In the matter of criminal responsibility different systems showed considerable divergence. The most important case in English law was that of the Director of Public Prosecutions *v.* Beard, which had come before the House of Lords in 1920. Lord Birkenhead, delivering judgment, had referred to a sixteenth century ruling which said that if a person drunk kills another he shall be hanged for it; inasmuch as that condition arose from his own act and folly he shall not be privileged thereby. Hook and Blackstone in the two succeeding centuries had ratified this, but judicial decrees since the early nineteenth century showed that the rigidity of the rule had been gradually relaxed. Lord Birkenhead had pointed out that the law took no heed of the cause of insanity; if alcohol caused insanity in the legal sense then the patient had as complete an answer to a charge as the sufferer from any other form of insanity, however temporary his condition. Drunkenness, however, was no defence unless there was evidence that the accused was so drunk that he was incapable of forming the specific intent necessary to the committal of a crime. If the evidence merely established that his mind was so affected by drink that he gave way the more readily to an impulse, then that would not rebut the assumption that he intended the consequences of his act. An Australian court had recently quashed a conviction, holding that there was no animus gerendi, since the accused had been too drunk to know what he was doing.

The Indian Penal Code differed from English law in that the man drunk through his own fault was no better off than the sober man. The laws of the United States corresponded more or less closely with the principles laid down in the case of Beard. Before the French Penal Code was drawn up drunkenness had actually been regarded as an aggravation of an offence, and the man had been punished for two evils—the cause and the result. For a long time in France drunkenness could not be pleaded as excuse or in mitigation of an offence, but milder views had gradually gained ground. The German Code classified drunkenness in two ways: first the circumstances under which the person became drunk—i.e., voluntarily; fraudulently, making himself intoxicated in order to facilitate a crime; or accidentally, due to the trickery of another party. Secondly, it recognised stages of drunkenness; first where the continuity of consciousness was retained; secondly, where consciousness remained but the mind was so clouded that mistakes were committed; and thirdly, complete intoxication depriving a man of his reason. In the first stage he was always responsible for his acts; the second stage was rarely free from imputability, and then only if he were "accidentally" drunk. In the third stage he was hardly every held responsible. Intoxication might be urged in mitigation if it were accidental or voluntary. In Hungary a man might be acquitted if "dead" drunk, or might plead it in mitigation if his intoxication were less complete. If he had taken drink to nerve himself for his crime it was regarded as an aggravation of the offence. Swiss law was much the same as German, but in Italy alone of any country was the chronic alcoholic sent to serve his sentence in a special establishment where he was treated for his condition. Drunkenness under the new Italian Code was neither to aggravate nor extenuate an offence, save in the case of drink taken to facilitate a crime or "accidental" intoxication. If a man made another drunk in order that he should commit a crime, the first man was to be punished in place of the delinquent.

The Drunken Motor-driver.

Nowadays few cases caused such difficulty as that of the drunken motorist. No definition of drunkenness had been given. The American Motor Vehicles Act, 1921, had gone a little further than English Law in stating that a vehicle driver was drunk if he were so much under the influence of intoxicating liquor as to be incapable of exercising effective control of such vehicle. Judge Sturges last year, at Windsor, had defined it as a condition where the skill and judgment normally required in manipulating a motor-car were obviously impaired as the direct result of alcohol.

Discussion.

Sir WILLIAM COLLINS said that there could be no definition; drunkenness was a matter of degree. It was comparable to the problem of when a calf became a cow, or a small heap a large heap. Witnesses should not be pressed for definition, called by John Hunter "of all things the most damnable."

Mr. ROLAND BURROWS said that the tort committed while in drink was a sphere wherein the theory of the law was wholly unworked out, as was also the case of insanity. While an insane person was certainly liable for some of his torts, it was quite impossible to pronounce upon others. A numbers of torts did not depend on a state of mind at all, and for these drunkenness ought not to affect liability. Criminal responsibility had been worked out at much greater length. There was reason to believe that, if the jury had been asked whether or not Beard had been drunk at the time of his offence, the answer would have been No. The judgment of Lord Birkenhead on this case had been the considered opinion of the House of Lords.

Mr. J. P. VALETTA wondered why some of the tests applied by doctors to persons accused of drunkenness did not seem to appeal to juries, although they impressed magistrates. He pointed out that a doctor was dragged out of bed at 3 A.M. to test a man at a time when even the most sober might not walk just as the doctor wished. Such tests ought not to be conclusive. The burden of establishing a standard of test rested on the medical profession, and he urged a reconsideration of the subject.

Mr. ROMAIN said that the law had deliberately avoided definition of drunkenness because it recognised different degrees. Before motor-cars became common the matter had hardly ever come before the courts.

Dr. MORGAN FINUCANE maintained that medical men had made real progress in this matter and cited Dr. Godfrey Carter's work on urine analysis. In his opinion no man who drank alcohol ought to drive a car.

Mr. W. A. CHADWICK quoted two definitions of drunkenness. The first was the military one; if a drunken man was fit to do his job, then he was sober enough to do it. The second had been given him by his grandfather: "not drunk is he who from the floor can rise again and still drink more, but drunk is he who prostrate lies without the power to drink or rise."

Mr. R. BOLTON spoke of the individual differences in drunkenness. An experienced driver might have lost his road sense, but still be better than an unskilled driver sober, and the two were equally guilty for being on the road at all.

CAMBRIDGE MEDICAL SOCIETY.

A CLINICAL and pathological meeting of this Society was held on Jan. 13th at Addenbrooke's Hospital. Dr. H. B. RODERICK, the newly elected President, took the chair.

Treatment of Varicose Veins by Injection.

Dr. F. A. HEPWORTH (Saffron Walden) described his experience of the treatment of varicose veins by the injection of a solution of sodium salicylate into the veins. The advantages of this method, he said, were that it could be used without difficulty in private practice, that the apparatus was very simple, and that the patients were able to continue their work during treatment and did not have to lie up at all. He used the following apparatus: a glass syringe with an eccentric nozzle to fit a short, fine needle, two sterile solutions of 20 and 30 per cent. sodium salicylate, and iodine and swabs for cleansing the skin over the veins. His method was as follows. The patient sits on a high couch, with the legs hanging over the edge, the skin over the most prominent veins is swabbed with iodine, and the needle is inserted obliquely into the chosen vein; a small amount of blood is withdrawn into the syringe before injecting the salicylate solution so as to ensure that the needle is in the lumen of the vein; 2 c.cm. of the solution are then injected slowly and the needle withdrawn. Dr. Hepworth said that he was accustomed to inject patients once a week, doing four veins at a sitting. He used the 20 per cent. solution the first time and the 30 per cent. subsequently. He emphasised the importance of injecting the solution into the vein, any leak into the surrounding tissues being liable to cause severe pain and ulceration, which would only heal with difficulty. The treatment should not be given if there was evidence of thrombosis of the deep veins of the leg. If it was properly carried out a slight tingling was the only sensation felt by the patient, who might be allowed to walk out of the house five minutes later. He showed two patients as examples of those he had treated and cured of symptoms by this method.

The PRESIDENT said that he had not tried injections for varicose veins, but in the treatment of hæmorrhoids he had used injections of urethane and quinine with success. This method was specially valuable when insufficiency of hospital beds prevented a more radical cure.

Dr. W. G. NASH (Bedford) had treated six cases of varicose veins with injections of quinine and urethane; no pain or discomfort had been caused, and the results were very satisfactory.

Demonstrations and Cases.

The PRESIDENT showed three pathological kidneys which he had recently removed. One was that of a man aged 60, who suddenly developed profuse but painless hæmaturia, which persisted for a week. A radiogram showed a faint shadow in a very large kidney, which on account of the continual hæmorrhage was removed. It proved to be a classical example of polycystic disease of the kidney with a concretion in the substance of the lower pole which had been shown by a faint shadow in the X ray. The patient had no symptoms after convalescence.

Dr. G. S. HAYNES showed a child on whom Mr. W. H. Bowen had performed Rammstedt's operation for congenital pyloric obstruction ten months previously. The child was in good health and weighed 25 lb.

Dr. FRANGCON ROBERTS showed a radiogram of the skull of a patient in whom right facial paralysis had developed after a blow on the head, caused by a fall on wet leaves. The lateral view showed a horizontal crack involving the squamous and petrous portions of the temporal bone. A second radiogram, taken from above, behind and slightly to the left, to show the inner petrous bone, showed a second crack leading from the first down to the stylo-mastoid foramen.

Mr. W. H. BOWEN said that an interesting point about the case was that the man only sought medical advice 19 days after the accident, and then only for the facial paresis, for he had had no other symptoms.

Dr. C. H. WHITTLE showed the heart and aorta of a man of 20, who had died suddenly while riding a bicycle. There had been no premonitory symptoms or previous history of over-exertion. The heart, which weighed 24 oz., showed enormous muscular hypertrophy, especially in the walls of the ventricles. Microscopically the muscle appeared quite healthy. The only other abnormalities in the body were a very slight decrease from normal in the lumen of the aorta, and a thymus, which weighed 28 g. Dr. Whittle said a number of such cases had been described, chiefly in America, but nothing was known as to the true cause of the condition or the reason for death. He also showed a specimen of a liver taken from a child who died at the age of 5 months as a result of congenital absence of the gall-bladder.

Dr. J. R. C. CANNEY described a case of acromegaly of which Dr. Roberts showed radiograms; Mr. BOWEN showed a case of spina bifida; Mr. A. S. H. WALFORD demonstrated epithelioma of tonsil and gumma of the turbinate bone; and Dr. W. R. GROVE (St. Ives) showed a heart with gummatous pericarditis.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

A MEETING of this Society was held on Jan. 18th, when Dr. A. LOGAN TURNER, the President, took the chair, and Dr. CHALMERS WATSON read a paper on

Unrecognised Toxic Substances in Human Fæces.

This paper was published in THE LANCET of Jan. 28th (p. 174) and included the results of experiments by Dr. P. De on the effect of injecting into cats a series of extracts from human and animal fæces. The following is a summary of the discussion which followed.

Prof. A. J. CLARK said he had followed the experiments with interest. The bowel was the "unknown continent" of the body, and its pathology had been less explored than that of other organs. The liver was not the perfect guardian to absorption that it was supposed to be; it often failed to defend the body against toxic substances, and a small difference in the material might make an enormous difference to absorption. It was wrong to assume that because in one particular kind of intestine toxins did no harm, they did not do so in others. Our knowledge of the liver, said Prof. Clark, was absurdly scant, and it was very necessary that more work should be done on absorption from the colon and its influence on disease.

Prof. G. M. ROBERTSON thought it very difficult to say, from the clinical point of view, to what extent the symptoms of mental diseases were due to intestinal toxæmia and to what extent the disturbances of the intestines were a sequel to mental disorder. He had often questioned intelligent patients as to whether their mental disorder—e.g., melancholia—or their gastro-intestinal condition had come first. Most of them believed that the mental symptoms preceded the intestinal. This might easily be accounted for by the melancholic state, with its loss of appetite and digestive interest in general, causing retardation of alimentary movement with consequent constipation and putrefaction.

Dr. STANLEY DAVIDSON laid stress on the importance of the hydrogen-ion concentration in the bowel, especially in cases of pernicious anæmia, where intestinal bacteria were more numerous than in any other condition he had seen. Team-work was essential if the subject was to be considered from all points of view.

Dr. A. GOODALL and Dr. R. A. FLEMING also took part in the discussion.

Dr. WATSON, in reply, referred to Dr. Davidson's remarks on the necessity for team-work, and remarked

that in the recent monograph on Toxæmia of Pregnancy published by the Medical Research Council there were 120 pages discussing 200 cases and 40 controls, yet only three lines were devoted to auto-infection and about 15 to auto-intoxication. No mention was made of the condition of the urine or stools along the lines to which he had referred.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

AT a meeting of this Section held on Jan. 20th, Dr. G. E. NESBITT, the President, in the chair, a paper entitled

The Sensitive Child

was read by Dr. B. D. CRICHTON, who pointed out that a very sensitive disposition might produce syndromes capable of being mistaken for the symptoms of disease. Much depended on the wisdom of those in charge of such children, for abnormal behaviour in a sensitive child was often due to the follies or neuroses of the parent or nurse. Sympathetic handling was essential, and encouragement rather than repression was the clue to managing most of the problems of difficult children. Many children laboured under the disadvantage of being forced to attend a school where education was carried out in surroundings and under conditions which were prejudicial to good health, and Dr. Crichton urged that medical men in Dublin should unite to make educational authorities see the harm done by the present system. In the Dublin schools the working hours were long, the lunch interval was badly chosen, lavatory accommodation was defective, and medical inspection wanting.

Dr. M. F. O'HEA agreed that the sensitive child was a definite entity. He felt that to try to make children plucky by holding up to them the pluck of other children was a great mistake. The best time for the principal meal was at present a vexed question; some schools insisted that the children should have dinner at 1 o'clock, and stopped school from 1 to 2 for this purpose. This he thought bad for the children's digestion, as it meant that they had to eat their meal too hurriedly.

Dr. V. M. SYNGE considered that children went to school far too young and learnt too many things by routine instead of reasoning them out. The so-called increase of education in Ireland by compulsory attendance at the national schools was not an unmixed blessing. He had seen children in quite an advanced stage of tuberculosis who were sent to school every day, as their parents were afraid of being fined if they did not send them. The national schools were far too crowded; in many of them there were 150 children in about three rooms, with only three teachers.

Dr. N. FALKINER asked if most of the children seen by Dr. Crichton had had some definite organic lesion; had their diet been faulty, and had the majority of them been breast-fed? If undue sensitiveness was associated with artificial feeding it should be more common in private practice than at hospital.

Dr. R. J. ROWLETTE, referring to the necessity for an altered school hygiene, said it was a pity that the enforcement of attendance at schools should have anticipated the establishment of a proper system of medical inspection. Whilst individual attention was necessary for the diagnosis of the sensitive child's condition, he thought it might be carried too far in treatment. If individual attention was unduly pressed it might lead to the child concentrating on itself, which was unhealthy.

Dr. LEONARD ABRAHAMSON agreed with Dr. Crichton that one of the greatest difficulties in dealing with the nervous child was the comparatively unknown factor represented by the nurse who was interposed between parents and child. In some cases it was as necessary to study the parents and the nurse as it was to understand the child. School hours were certainly too long, and he thought it unfair that the hours should be longer in national schools than in private schools.

The PRESIDENT said he could not imagine anything worse than a child who was *not* sensitive, or an adult either. He thought Dr. Crichton should have called his paper The Supersensitive Child. Undoubtedly one of the most important influences in the bringing-up of children was the nurse; another important factor was heredity, which played a great part in the sensitiveness of children. Nowadays, in cases of extreme naughtiness, the question of encephalitis lethargica was worth considering, for children who had suffered from this disease, even slightly, were liable for some time afterwards to be naughty purposely.

Mr. W. C. MCFETRIDGE and Sir JOHN MOORE also joined in the discussion.

Dr. CRICHTON, in reply, said that when talking about sensitive children he had really meant super-sensitive children. The average child wanted to be constantly doing something, and he thought that care should be taken to study its favourite pastimes and habits. The education of nurses for small children had not really been given enough thought. It must be borne in mind, however, that nurses were rather born than made. The child's heredity was exceedingly important, but it was equally difficult to tell the parents the trouble. He believed that not enough interest was taken in the teaching of children; the preparatory school was more important even than the public school, as in the first five years a boy could be either made or marred. He had not found much difference between breast-fed and bottle-fed children. By over-treatment a child could, of course, be made more sensitive. He thought that the principal meal should be between 1 and 1.30 o'clock, and not as late as 2 or 3. The interval allowed at most schools in the middle of the morning was too short.

Dr. J. H. POLLOCK read a paper entitled

A Case of Psychoneurosis.

In describing the clinical history in psychoneurosis it was important, he said, to pay attention to the time-factor. In the case he reported the psychical disturbances came on first some considerable time after the shock to which they were due, and aroused buried fears dating back to a much earlier period. It was also important to remember that recovery was bound to be slow, and attempts to hurry the process were comparable to "meddlesome midwifery." Simple analysis might help the physician to understand the details of his case, but it was a grave mistake to interest the patient in the process or present it to him as a means of treatment. The psychoneurotic tended to be subjectively-minded, and the aim of treatment should be to make him objectively-minded.

The PRESIDENT, after pointing out that repression was now admitted to be one of the most important factors in mental upset, went on to discuss the endocrine basis of these disturbances. More attention should be given to the relation of psychoneurosis to the ductless glands.

Dr. ABRAHAMSON considered that cases of psychoneurosis could only be investigated with difficulty in general practice and should not be dealt with except by a man who had time to go into them thoroughly. He referred to a mental patient whom he had recently seen. She had had a motor accident, had fractured her skull, and had been trephined; shortly afterwards she was certified as definitely insane. In conversation the patient constantly spoke of numbers and also of colours, and Dr. Abrahamson had ascertained that just before the accident her eyesight had been tested, and she was being attended by nuns who wore black and white.

Dr. ROWLETTE said that in these cases what was most important was not classification in regard to treatment, but in regard to prognosis. The question was when should the line of certification be drawn? Many of these patients became seriously depressed, and it was in the depressed patient who was not actually insane that there was the greatest danger of suicide. The condition often arose out of a long-standing conflict, generally between one of the primal motives in human beings on the one hand and moral

restraint on the other. People often took refuge in drugs as a method of preventing loss of self-control. In all these conditions both the mental and the physical substructure had to be considered, and it was impossible in any case to separate one from the other completely.

Dr. O'HEA thought that cases of severe neurasthenia were not nearly so common now as in the previous decade. Dr. T. M. CORBET, Dr. R. H. MICKS, and Dr. R. S. STEEN also spoke, and Dr. POLLOCK replied.

A Case of Bronchiectasis.

Dr. ABRAHAMSON showed a child aged 4 with fibrosis of the left lung and left-sided bronchiectasis.

The patient had been seen by him for the first time on June 15th, 1927, and the only history was one of recurrent attacks of cough with sputum. Examination showed some cyanosis of lips and cheeks and clubbing of the fingers. There was diffuse dullness over the left axilla and over the back of the left lung, whilst towards the base there was an area yielding signs of a cavity. A diagnosis of bronchiectasis was made and the patient was admitted to hospital. There it was noted that the cough occurred mainly in paroxysms, and that the sputum was fœtid. Vomiting followed some of the paroxysms. Radiography showed that the inner half of the left pulmonary field was obscured by a dense, almost homogeneous, shadow. Some comparatively translucent areas suggested cavitation. The outer half of the lung had a network of dense shadows, and the cardiac arteries were completely obscured. The radiographic appearances pointed to the presence of large bronchiectatic cavities, with extensive fibrosis. Radiograms were also taken after injection of lipiodol. The sputum was negative for tubercle bacilli, and culture yielded streptococci and pneumococci. Treatment was by creosote and vaccine, with tonics, and considerable improvement had taken place.

The PRESIDENT said that these cases caused a great deal of worry because they were usually shrouded in mystery, and it was exceedingly difficult to give a prognosis. He himself had an almost exactly similar case under his care.

The patient was a girl, aged 9, who began to run a high evening temperature ten days after having had tonsils and adenoids removed. She had now been in hospital for a couple of months. There was a definite area of dullness at the apex of the right lung, and a radiogram showed a dense shadow and a cavity containing fluid. The sputum had been examined several times with negative results. After a time the patient brought up a lot of foul sputum and got better for a week, but then relapsed again. A little later, however, she brought up pus and a lump of solid material, the size of a hen's egg. This turned out to be a blood-clot. Dr. Nesbitt thought that after this the girl would die, but next day there were obvious signs of a cavity and cavernous breathing. It was obvious that the girl had an abscess in the lung, and he thought that this must be caused by a foreign body.

The President said that this was the second case which had come under his care with a definite abscess of the lung, following the removal of tonsils and adenoids.

Dr. W. M. CROFTON referred to treatment by immunisation. In these cases tubercle bacilli were always looked for, but the possibility of any other organisms being present was usually overlooked.

Dr. ABRAHAMSON, in reply, said that as there was no history of an acute infection and no suggestion of inhalation of a foreign body he considered that the bronchiectasis was due to congenital weakness of the left bronchial tree in association with recurrent broncnitis. Thoracoplasty had been considered, but in view of the improvement was not contemplated at present. He was of opinion that in this case vaccines had been of material help.

DONCASTER ROYAL INFIRMARY.—Serious money difficulties have put a stop to the erection of the new building, which is intended to contain 300 beds. In October, 1926, the Prince of Wales laid the foundation-stone of the first three wards, which will contain 140 beds, but the depression in trade following the coal strike stopped the flow of money, and for more than a year the foundations have remained untouched. The infirmary is now so overcrowded that several patients are lying on mattresses on the floor, while some of the cots contain two children.

Reviews and Notices of Books.

THE INFANCY OF MEDICINE.

By DAN MCKENZIE, M.D. Glasg., F.R.C.S.E., F.S.A. London: Macmillan and Co. 1927. Pp. 421. 15*s*.

THIS inquiry into the influence of folklore upon the evolution of scientific medicine is, as might be expected from its author, alike full of information and pleasant writing. Dr. McKenzie expressly disclaims having written a history of medicine; rather he is describing medical art in the making—"the shifting sands" in his own words, "of medical opinion and modes of thought as well as the record of outward and visible happenings." The long and complex subject is treated in six stages—namely, the prehistoric, including the savage epoch; the ancient epoch, which takes note of Egyptian, Babylonian, Persian, Buddhist medicine, and occasionally of ancient Chinese and Japanese science; the classical epoch, covering Greek, Roman, and Arabian medicine; the mediæval epoch, where the reference is to the Dark Ages and the Middle Ages; a fifth epoch, termed pre-scientific or transitional; bringing us to the beginning of the nineteenth century, since which date all that happened is summarised as the scientific or modern epoch. In his preface Dr. McKenzie apologises for these divisions as arbitrary, but while it is true that they are not separated from one another by any clear line of demarcation they make an extremely convenient scheme for dealing coherently with big and heterogeneous material.

Concerning the early evolution of the medical man, which implies the separation of medicine from mysticism, Dr. McKenzie writes on familiar lines—how could it be otherwise? But the chapters on primitive pathology and treatment will reveal to many readers who have no first-hand acquaintance with ethnology or its literature what were man's starting conceptions of disease and what the parts played by belief in demoniac possession and magic, both of which the author conceives to have had more influence than any appreciation of natural causes. These sections constitute the first part of the book, and a glance at the full and careful bibliography will show how well documented the author is and should help readers to follow in his footsteps.

In the second part individual methods of treatment are taken up, the origin and history of various creeds, and the employment of various drugs being discussed, the statements being again supported by voluminous references. It should be useful that the author has here attempted to follow up the ancient theories and technique so as to correlate modern medical thought with the origins, many and curious, from which it has evolved. But in respect of the evolution of animal remedies the various revolting devices for relief and cure which are described show how entirely the intentions as well as the procedure of our forefathers were divorced from the researches that have led up to the recent introduction of animal products into our therapeutics. Our laboratories owe nothing to these coarse superstitions, and Dr. McKenzie issues a warning to this effect which is timely, for we see in the popular press the exact reverse stated, time and again, in order to frame an argument against the existence of medical progress. The evolution of botanical remedies, the influence of astrology on medicine, the history of balneology, and much piquant writing on superstitions in connexion with menstruation, impregnation, circumcision, and other mutilations, lead up to the stories of early operative surgery, and of the practice of midwifery through the ages. Thus Dr. McKenzie has made up a volume of absorbing interest to the historical student, while also supplying information which is often exactly apt for the understanding of medical literature to-day.

The book is dedicated to the honour and glory of the author's Alma Mater, the University of Glasgow, for it constitutes the Prize Essay in the History of Medicine awarded in 1925 by that University.

PYORRHŒA ALVEOLARIS.

By F. ST. J. STEADMAN, D.P.H., L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon to the Royal Dental Hospital and West London Hospital. London: Henry Kimpton. 1927. Pp. 263. 25*s*.

THE term pyorrhœa alveolaris is admittedly a misleading and inaccurate one. But since there is no name which correctly describes the salient features of the various conditions to which this name is applied, few can complain of its use as a convenient title for those diseases which affect the gum and periodontal membrane. This book includes ætiology, pathology, symptoms, sequelæ, and treatment. Mr. Steadman recognises three types of pyorrhœa, the germ carbohydrate-stagnation type, the atrophic type, and ulcerative gingivitis. We doubt if the inclusion of this last condition is legitimate. It is an acute condition, of specific causation, and if treated, of brief duration. Clinically and ætiologically it is entirely different from the chronic conditions denoted by the term pyorrhœa. Mr. Steadman lays great stress on the rôle of carbohydrate stagnation in causing a marginal gingivitis, which may later lead to definite infection of the periodontal membrane. That this may be one of the factors concerned seems probable, but the author surely makes too much of it. When he says that pyorrhœa is essentially a disease of childhood, apparently on the grounds that gingivitis is common in childhood, we cannot follow him. Not every case of gingivitis develops into pyorrhœa and it is not universally accepted that pyorrhœa always begins as a marginal gingivitis. Mr. Steadman offers but little explanation as to the causes of the atrophic type. Injury, blood-borne infection, and traumatic occlusion are mentioned, but it is obvious that the ætiology of this condition is obscure. The chapter on pathology is disappointing. There is no mention of the work of B. Gottlieb, and the researches of H. K. Box do not receive adequate notice. The changes in the pulp which almost invariably accompany periodontal disease are not described. The few pages of physical signs and symptoms are equally meagre. The account of the bacteriology of pyorrhœa is better, but even here the important work of J. Kritchevsky and E. Séguin on the possible rôle of *B. fusiformis* and *S. vincenti* in pyorrhœa is ignored. The largest section in the book is devoted to the systemic complications which may follow from dental sepsis. Mr. Steadman casts his net widely and includes almost every disease which at one time or another has been related to pyorrhœa, on the grounds of its improvement following the treatment of the teeth. He adopts the rather unusual proceeding of giving a brief account of the symptoms of many of these diseases. This increases the size of the book, which is a disadvantage, and, moreover, may give the student the fallacious impression that insanity, erythema nodosum, cancer, asthma, glycosuria, and so forth are specifically due to dental sepsis, though this is certainly not the author's aim. The section on treatment is detailed and embodies many useful points. It is the best part of a book which, in spite of its defects, contains many shrewd reflections and much sound advice. The illustrations are numerous and excellent, especially the coloured plates.

THORACOSCOPY.

Lehrbuch und Atlas der Laparo- und Thorakoskopie. By Dr. ROGER KORBSCH. München: J. F. Lehmanns Verlag. 1927. Pp. 74. M.12.

ENDOSCOPIC methods for the examination of the peritoneal and thoracic cavities have not made such headway in this country as they have on the Continent. Dr. Korbsch has evidently devoted a great deal of attention to their study, and he has condensed into this volume a large amount of information as to the technique used and the results which may be expected. The book is illustrated by a series of coloured plates, beautifully drawn and produced, which show the various appearances very clearly.

DICTIONARY OF NATIONAL BIOGRAPHY.

1901–1911. Three volumes, bound together. Pp. 644, 669, 739. 21*s*. 1912–1921. One volume. Pp. 623. Same price. London: Humphrey Milford, Oxford University Press.

THE Dictionary of National Biography was planned originally to end at the close of the nineteenth century, but was extended so as to contain the biographies of noteworthy persons who had died before Jan. 22nd, 1901, that being the day of Queen Victoria's death. Two Supplements were issued later by Messrs. Smith Elder and Co., whose senior partner Mr. George Smith, had devised the wonderful scheme. Each of these Supplements was in three volumes, and in format similar to the well-known series; the first Supplement contained the lives of those who had died up to the day of Queen Victoria's death and were for one reason or another not included in the original volumes; while the second contained the lives of those who had died between that date and the end of 1911, the three volumes comprising 1660 lives. This second Supplement was edited by Sir Sidney Lee, with the assistance of Mr. W. B. Owen and Mr. G. S. Woods, and was issued in accordance with the determination to continue one of the most valuable works of reference in the world by regular decennial issues. The firm of Smith Elder and Co. having been dissolved in 1916, the heir to Mr. George Smith, the founder of the Dictionary, presented the stock and copyright to the University of Oxford. Hence the Oxford University Press is now publishing the two volumes under review, the first volume (1901–11) being a reprint on thin paper of the original second Supplement, while the second volume (1912–21) is the next decennial issue. This is edited by Mr. H. W. C. Davis and Mr. J. R. H. Weaver, contains a composite index covering both decennial periods, and has for its appropriate preface a full memoir of Sir Sidney Lee. This memoir is extremely interesting not only as recording the life of a noteworthy man of letters, but as containing in brief the story of the evolution of the Dictionary. Thus we see how remarkably the great design of Mr. George Smith was carried out by the first editor, Leslie Stephen, in coöperation with the first sub-editor, Sidney Lee; we obtain insight into the way in which the ideals of George Smith, Leslie Stephen, and Sidney Lee were carried out in a composite scheme, with necessary modifications but with no abatement of the high standard determined upon. The arrangements for production and systematisation of the output, and the precautions taken to secure uniformity in quality and fitness between the subject selected and the space allotted are set out, and the following interesting piece of information is quoted from Leslie Stephen himself in justification of the inclusion of the less celebrated:—

"The judicious critic is well aware that it is not upon the lives of the great men that the value of the book really depends. It is the second-rate people—the people whose lives have to be reconstructed from obituary notices or from posthumous works; or sometimes painfully dug out of collections of manuscripts; and who really become generally accessible through the Dictionary alone—that provide the really useful reading. Nobody need look at Addison or Byron or Milton in a dictionary. He can find fuller and better notices in any library; and the biographer must be satisfied if he has put together a useful compendium of all the relevant literature."

The volume 1901–11 includes the names among others of the following distinguished members of the medical profession: Thomas Annandale, William Mitchell Banks, Lionel Beale, Charles Beevor, G. F. Blandford, William Broadbent, H. H. Clutton, Joseph Fayrer, William Tennant Gairdner, Alfred Garrod, Samuel Gee, Luther Holden, Timothy Holmes, Hughlings Jackson, J. W. Ogle, F. W. Pavy, J. F. Payne, Vivian Poore, Sydney Ringer, Argyll Robertson, T. D. Savill, Edward Sieveking, Charles Bell Taylor, Thomas Henry Wakley, and Thomas Wakley, jun. In this list it may be that only one name will go down to posterity as a pioneer—one to whose exploratory work the solid annexations of the future are due—but every name for years to come

may find its place in medical references, thus making the student appreciative of the details supplied by the dictionary. The notices of Thomas Henry Wakley and Thomas Wakley, the son and grandson respectively of the founder of THE LANCET, both of whom succeeded to the editorial chair, are sympathetic.

The volume (1912–21) covers, of course, the four and a half years of the European war, and among the many national losses during that terrible epoch we find chronicled the names of Victor Horsley and Elsie Inglis. For the rest the list includes those famous persons Elizabeth Garrett Anderson, Sophia Jex Blake, William Osler, and the great Lister. Other names to be recalled to memory are Lauder Brunton, Henry Butlin, Thomas R. Fraser, William Gowers, Jonathan Hutchinson, Leander Starr Jameson, Wickham Legg, Edward Nettleship, William Henry Power, Felix Semon, Anthony Traill, William Turner, E. Adrian Wilson, and Charles Wyndham, a curiously interesting list because of their very varied claims to well-earned fame—claims which are so recent as to need no recalling. In this volume will be found also many names which will always be associated with the development of our profession; for example, we have biographies of two great chemists, William Ramsay and Henry Roscoe, Russel Wallace the contemporary discoverer with Darwin of fundamental truths in evolution, Adam Sedgwick the biologist, and Robert Morant, to whose personal energies and sympathy it was largely due that the profession of medicine obtained its measure of recognition under the National Insurance Acts. The volume (1912–21) is, as will be seen, very much shorter than its predecessor, and is planned on less ample lines than the older of the supplements published by Messrs. Smith Elder and Co. under the editorship of Sir Sidney Lee. It was seen that if a similar policy of selection had to be pursued throughout the present century the result would be to add about 15,000 lives (and nearly 20,000 pages of print) to the main work. The editors have therefore reduced the average length of the articles and have no doubt been more strict in the admissions to the national roll. There is one obvious justification for such a policy—namely, that in the second quarter of the twentieth century books of reference containing biographical details and small individual biographies abound. It is extremely unlikely that the historian of the future, considering the mass of contemporary material finding its way into print, could ever be at a loss for any really necessary information about anybody, where that information was of national importance.

POPULAR PHYSIOLOGY.

Living Machinery. By A. V. HILL, M.A., Sc.D., F.R.S., Foulerton Research Professor of the Royal Society. London: G. Bell and Sons, Ltd. 1927. Pp. 256. 7*s.* 6*d.*

THOSE who attended the Christmas lectures for young people at the Royal Institution last year will remember how skilfully and amusingly Prof. A. V. Hill elucidated the nature and function of nerve and muscle. It takes something very like genius to explain in non-technical language the nature of a conditioned reflex or the process of carbohydrate metabolism, and Prof. Hill has in addition to this power a charming and easy style. The six lectures here printed are on nerves and the messages they carry; muscles and how they move; the heart; the lungs and circulation, which supply the muscles with air and fuel; the way in which nerves and muscles work together, and the physiological bases of speed, strength, and endocrines. Besides many diagrams and illustrations in the text, the book also contains 24 excellent plates. Most laymen know very little about their bodies, and it is mainly for their information that such popular works as this are published. Probably many medical men may find that they know more after reading these lectures than they did before; at any rate, they will wish that all their scientific knowledge could have come to them in such a palatable form.

FRACTURES OF THE NECK OF THE FEMUR.

Le traitement des fractures du col du fémur. By JACQUES LEVEUF and CH. GIRODE. Paris: Masson et Cie. 1927. Pp. 148. Fr.30.

THIS is a description of Prof. Pierre Delbet's work on the treatment of fractures of the neck of the femur and is an extremely interesting record of his methods and results. The authors show that a metallic screw is useful in younger patients and that a living autograft of bone leads to good results in a large percentage of older people. The description of the details of these operations is a revelation of logical thought and inventiveness, not always brought to bear upon such problems. The technique is complicated and precise, obviously demanding skill, great care, and experience, but the results indicate that its acquisition is well worth time and trouble.

METHODS OF RACIAL STUDY.

Rassen-Forschung. Von Dr. WALTER SCHEIDT, Privatdozent für Anthropologie an der Universität Hamburg. Leipzig: George Thieme. 1927. Pp. 80. M.5.80.

THIS little book is designed as an elementary introduction to the methods to be used in racial studies, especially such studies as, starting from the general laws and theories of race, describe the race biology of some given population. The introduction gives a warning against the over-estimation of the technique of measurement and description without adequate knowledge of the subject matter of anthropology, and insists on the importance of plan and hypothesis in research—of putting a definite question rather than being content with an aimless presentation of facts, and of connecting local differences of bodily characteristics with definite national and general cultural manifestations.

Section I. deals with the choice and sifting of the material to be studied, and points out common errors. Biased errors, such as taking a non-representative sample, cannot be remedied simply by studying larger numbers. The tendency of any observer, again, is to lay stress on the unusual rather than the typical, such exceptions often being made familiar by their reproduction as so-called "national types" in popular pictures and postcards. No amount of skill in computation can compensate for systematic errors in the collection of material. The choice and grouping of the characteristics to be recorded receive careful consideration. The second section deals with elementary statistical methods, and the constants used in the description and comparison of mass observations. The author has an unfortunate preference for the mean variation over the standard deviation, and for Lenz's approximate methods of correlation and regression over the more exact and commonly used product moment method. His objection in biological work to constants based on least square methods as putting too much weight on outlying observations does not seem to outweigh the advantages of the latter. These, as Prof. Karl Pearson has pointed out, are a smaller sampling error, a unique value, and a definite meaning not limited (as is Lenz's Deutscher Korrelations-index and its derived regression) to the case of normal distributions. Minor defects in this section, and also in the appendix, are several misprints that might mislead a beginner; a four-fold table, such as that on p. 45, in which one of the alternative groups to be again divided only contains five observations, is of little value and ill-chosen as an example. References also are not complete—e.g., Mollison's formula for a type difference is not a familiar one, but no reference as to its origin is given.

The notes on statistical methods in the recently published report of the British Association Committee on biological measurements (Section D, Leeds, 1927) are to be preferred. This useful little report covers in a less detailed way most of the points discussed in Dr. Scheidt's book in their general application to biological work.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 4, 1928.

THE ALLEVIATION OF DEAFNESS.

DEAFNESS is a widespread and disabling affliction, and in a large number of cases it is at present little amenable to treatment; there is, therefore, small cause for surprise that any claim for a new method of treatment as giving successful results should be widely quoted in the lay press and should arouse the interest and hopes of a large number of sufferers. This has been the fate of an article by Major V. NESFIELD,[1] recently published in our columns; so irrelevant and unjustified have been some of the comments that a brief review of the treatment of chronic deafness may be useful in the endeavour to get the subject into proper focus. Such a summary of what is known will not obtain the publicity secured by the surmises, but we feel that our readers, despite its elementary nature, may find in it counsel that will be useful to their patients.

Chronic deafness is due to various causes, which may be classified shortly in two groups: those resulting from impairment of the apparatus of perception or of the nerve-paths thence to the brain—these may be called "nerve-deafness"; and those caused by interference with the transmission of sound-vibrations through the tympanum, or "middle-ear deafness." This latter group contains three main subdivisions, the results respectively of suppuration in the tympanum, otosclerosis, and chronic middle-ear catarrh. Regarding these various forms, we cannot expect that treatment of the tympanum will do good in nerve-deafness. In otosclerosis the essential lesion is the growth of new spongy bone in the neighbourhood of the fenestræ and elsewhere in the capsule of the labyrinth; here in view of the small size and inaccessibility of the parts concerned, and of the progressive character of the lesions, surgical interference is likely to do more harm than good. In active aural suppuration timely surgical treatment is of the greatest value in curing the disease and, of course, in improving the hearing; cases of healed suppuration left with a perforation of the drum already have the tympanum open to the air, and offer no opportunity for an operation designed to give an artificial opening into the auditory cleft. The problem of healed suppuration with an intact membrane approximates to that of chronic middle-ear catarrh. This last affection is the cause of a considerable proportion of all cases of chronic deafness which are variously described under such titles as chronic adhesive catarrh, or chronic hypertrophic and hyperplastic otitis media; the essential pathology is the production of new tissue-elements in the mucosa of the tympanum and Eustachian tube, resulting in thickening, contraction, and adhesions. Inflammation has spread from the upper air passages along the tube, and the degree of deafness which it causes will depend largely on the situation of the lesions, being most severe when the fibrous changes affect the region of the fenestræ. While the thickening of the mucosa is localised principally to the Eustachian tube, restoration of its patency by catheter and bougie has a good result; but when intratympanic fibrosis has reached a high grade, treatment of the Eustachian tube has little or no effect; indeed, at a late stage, secondary atrophic changes have often restored the patency of the tube, while the internal ear is liable to become involved, as is shown by the diminution of bone-conduction. It is in this class of case, where none of the usual methods of treatment is of any avail, that various operations have been tried, mostly with the idea of admitting air to the auditory cleft, in remedy of the effect of the closure of the Eustachian tube. It must, however, be apparent, from the considerations just mentioned, that such operations can only be expected to do good when the fenestræ are not occluded by fibrosis or bony deposits, and when the internal ear is not severely involved. On the other hand, when the hearing is not improved by restoring the patency of the Eustachian tube, it is probable that intratympanic fibrosis has already occurred. It would therefore appear, on *a priori* grounds, that operative interference will be useless when the Eustachian tube is patent, and unnecessary when its patency can be directly restored, and that it can be indicated only in those rare cases where there is an impermeable stricture of the tube.

POLITZER,[2] we may recall, has stated that attempts to restore the hearing by excision of part of the membrana tympani date back to the end of the seventeenth century; they were revived, early in the nineteenth century, by HIMLEY and ASTLEY COOPER independently, but it was not long before these two operators became convinced that good results were only temporary. POLITZER maintained, and this seems obvious, that operation can only be successful if the membrane of the round window is not thickened and if there is no labyrinthine complication; he held that no improvement can be expected when perception through the cranial bones is diminished. At the Sixth International Otological Congress, held in London in 1899, Dr. ARISTIDE MALHERBE, of Paris, read a paper claiming good results from an operation in which he scooped out the mastoid down to the antrum, cut a flap in the posterior meatal wall, and kept the communication between meatus and antrum open by means of a celluloid tube. He had operated on some 60 cases, but was careful to insist that not all cases of chronic deafness were amenable to surgical treatment, and that it was indispensable to examine the patient in a systematic manner, operation being essayed only if the perception for acoumeter and deep-toned tuning-fork was not much reduced, nor the bone-conduction for the deep fork, while loss of high notes was extremely unfavourable. In spite of these very proper cautions, his procedure has fallen into the limbo of forgotten things; all surgeons are not so ultra-conservative as to refuse to try new methods, and it is fair to assume that the operation has not survived because the results did not justify its performance. It is unfortunate that a committee, appointed in Paris to inquire into his results, was discharged without having been given adequate material on which to reach a conclusion; had a number of good results been available, it is to be presumed that they would have been brought before this committee.

Major NESFIELD'S operation is planned on lines very similar to Dr. MALHERBE'S, except that he does not keep in a tube to maintain the artificial opening for more than 48 hours, and that he sinks a comparatively narrow shaft through the bone to the antrum. Those with experience in aural surgery

[1] THE LANCET, 1927, ii., 1338.

[2] Politzer's Diseases of the Ear, sixth edition, edited by M. J. Ballin. London, 1926.

know how difficult it is to obtain a sound epithelial lining to a narrow cavity in the bone, and to maintain its patency, and some remarks in our correspondence columns show that Major NESFIELD'S opening does not always remain. In his short paper he does not mention the preliminary examination on which Dr. MALHERBE insisted, and, as he has operated on patients from the ages of 4 to 70 years, it is probable that his patients include sufferers from a variety of different conditions. It is to be expected, therefore, that Major NESFIELD will supplement his paper by an analysis of his results, both as regards the hearing and the patency of the new opening, with a full description of hearing tests before and after operation in a considerable number of patients. If in this way the new evidence justifies the proceeding, it would be well that an independent committee should be formed to examine and report on a series of the cases; there should be no difficulty in obtaining the coöperation of an expert body if the circumstances reveal a need for inquiry.

PSYCHONEUROSES AND INDUSTRY.

EDUCATIONAL tests are partly tests of intelligence, but their results throw no light upon intelligence unaffected by the results of education. Hence it has been the aim of psychologists to devise tests which would measure intelligence irrespective of educational influence, and such tests have been sufficiently perfected to be reliable in educational and vocational guidance. Happiness and efficiency, however, depend upon other factors besides education and intelligence. Among these physical health comes first, and the health of aspirants to particular callings is rightly made a subject of investigation; but there is also a numerically serious group of disabilities which arise from difficulties of mental adjustment to conditions of work and apparently depend upon qualities that hitherto have not been detected either by psychological or medical examination. In his paper on the incidence of the minor psychoses, printed elsewhere in this issue, Dr. MILLAIS CULPIN shows that in some establishments there is a serious loss of time through sickness which appears under such headings as nervous debility, nervous breakdown, or cardiac and nervous strain; in other establishments these illnesses are almost or quite absent, whilst in others again they are concealed under such diagnoses as dysmenorrhœa, anæmia, or gastric disorder.

The work he describes had begun as an investigation into telegraphists' cramp, most of the sufferers from which also presented severe psychoneurotic symptoms. Non-cramp controls, however, revealed a surprising number of men and women with similar symptoms, and it was decided to examine people in other employments in order to ascertain what proportion of the general population suffered from psychoneurotic symptoms that might be reflected in sickness-rates. The proportions varied somewhat in different occupations, but the effect upon sick-rates bore no relation to these proportions. Laundry workers, for example, in whom psychoneurotic illness was practically unknown, showed little difference from clerical workers in the incidence of what Dr. CULPIN calls latent minor psychoses. Some factor besides this latent tendency must therefore determine the excessive sickness in some occupations, and here further research is required. The investigation has shown that in a single interview by a trained observer with voluntary subjects nervous symptoms can be elicited which have previously escaped the notice of their medical attendants and yet have great influence not only upon their happiness but their health and efficiency. Our conceptions of what constitutes "nervousness" in a patient have hitherto been rather vague, and if a student were invited to ascertain whether a patient suffered from nervous symptoms that might be significant for diagnostic purposes, he would be rather at a loss how to discover them. Although Dr. CULPIN does not point out its moral, yet the case of the art student who at the age of 19 had already undergone an operation for some form of visceroptosis, whilst suffering from obsessional symptoms which it is not the custom of medical men to seek for, suggests a relation between nervous symptoms and visceroptosis, whose possibility will never be elucidated until we learn to investigate the nervous symptoms. This case was cited to illustrate the curious observation that the McDougall-Schuster dotting test—used by Miss MAY SMITH in this investigation as a check upon the psychopathological findings—picks out obsessional subjects by the excellence of their performance.

That the psychological results are significant is also confirmed by Prof. MAJOR GREENWOOD'S statistical examination of the relation between them and the judgment formed by instructors concerning the capabilities of learners at telegraphy. Although the investigators had set out only with the aim of discovering whether it might be possible to detect beginners who would later become subject to cramp, yet their results were in fair accord with the opinions of the instructors, formed after several months of observation, concerning the present ability of these young people. This indicates that by their methods it may be possible to select those learners who are likely to become efficient and thus to supplement present methods of vocational selection and guidance. It is to be noted that the methods measure neither education nor intelligence, but temperamental reactions, and that in this lies their novelty as applied to vocational selection. The ramifications of this research seem widespread, but at present its most important aim is the investigation of the modern plague of "nerves" as it affects sickness-rates in industry. That it has been undertaken by the Industrial Fatigue Research Board is a recognition of its importance.

HEALTH AT SCHOOL: THE DOCTOR AND THE TEACHER.

IT is now 20 years since the medical inspection of school-children was made compulsory by Act of Parliament. The Circular of the Board of Education, issued when the Administrative Provisions Act of 1907 came into force, emphasised the fact that the new legislation aimed not merely at a physical survey or record of defects but at the physical improvement—with its natural corollary, mental and moral improvement—of coming generations. Justification for this policy was to be found, not in terms of money, but in decrease of sickness and incapacity among children and in the ultimate decrease of inefficiency and poverty in after-life arising from physical disabilities. During this period of 20 years the reports of the chief medical officer of the Board of Education have served as a sort of Domesday Book of the physical condition of the English child. We need not stay to point out here how and in what degree this condition has changed owing to the activity of the School Medical Service, but it may not be amiss to remind our readers that this Service had last year a medical and dental staff of 2362 practitioners with 4779 nurses at their disposal for part or the whole of their time. Put in a word or two, the fourfold aim of

the Service has been to fit the child to receive the education provided for it, to detect any departures from health, to discover and prevent the causes and conditions of defect and disease, and to teach and practise personal hygiene in every school. In the first three aims medical inspector, specialist, and nurse can not only initiate but largely carry through their task; the fourth and chiefest aim is only realisable through the coöperation of the teachers and indeed of the children themselves. It is for this reason that peculiar interest attaches to a handbook which has just been issued.[1]

This is a Manual on Health Education, complementary to the Handbook of Suggestions for Teachers, and intended to replace the Syllabus of Hygiene for the Training of Teachers. The handbook of 83 pages is divided into two parts, one containing subject matter for health practice and health talks for young children, the other containing outlines of health lessons for older children; and more than three-quarters of the book is taken up with detailed notes upon these lessons. Those who are sometimes tempted to doubt whether there is any considerable agreed body of teaching on popular health matters will turn to these notes with a pleasurable surprise. Sir GEORGE NEWMAN, as chief medical officer, contributes an introduction on health education. Hygiene, he points out, is so essential to school life that it cannot be a mere subject of instruction; like behaviour and conduct it is the groundwork of all else. The way of hygiene cannot be found by the uninitiated child, and it is nurture rather than instruction which he requires. Hygiene should be taught to young children by habit training, although, when the elements of science and housecraft have been mastered, some degree of reasoned explanation and interpretation may become practicable. But for young children there is little need or place for instruction except in the mode of presenting health axioms and practices. One teacher may choose to make a daily inspection of the children, another may utilise the drawing lesson as an opportunity for dealing with cleanliness; the midday meal may furnish occasion for a talk about the care of the teeth, and nature-study lead to brief practical applications of physiology. For the older children health instruction may constitute part of the general science course or of a course in simple biology. Some of its substance will come into periods devoted to history and geography, while in the case of girls much will naturally form part of the teaching of domestic subjects and housecraft. The live teacher will lose no opportunity of securing the child's active coöperation in all matters of health at school and will endeavour to link up the school with the home.

Dr. R. H. CROWLEY, senior medical officer to the Board of Education, had the issue of this Handbook before him when a week or two ago he addressed the North of England Education Conference on some fresh aspects and developments of health in relation to education. He remarked how securely set had become the medical inspection of school-children in the public health service of the country and how it had contributed to the shaping of a freer curriculum for young children, to the provision of open-air schools for the delicate child, and to the planning and equipment of schools more in harmony with the child's requirements for growth and development. But in removing physical defect and preventing its onset the ground would only have been cleared for the development of the principal aim of the Service, the realisation of which was in the hands of the teacher, the doctor being called upon to guide and, perchance, to equip himself to guide. Regarding the whole process of education as in itself a biological process, function illustrated by form should be the motto of the school teacher, the subject itself being entitled to rank as fundamental with the teaching of English and the opportunity for creative work. It is easier, he said, to make health education grip in the case of girls than of boys. Domestic science—or, to use the preferable term, home economics—in the case of girls linked up the home with the school, but some equivalent in the case of the boy had yet to be worked out. It might come through further development of handyman courses, through wider acceptance of the boy-scout movement, through greater emphasis on first-aid activities, or through steps taken to interest older boys in community hygiene such as water-supply, sewage, and the distribution and care of milk. Should public education in this country develop on such lines, the charge could no longer be truly laid against the system that it is too grey.

[1] Board of Education. Handbook of Suggestions on Health Education for the consideration of teachers and others concerned in the work of public elementary schools. H.M. Stationery Office. 1928. 6d., paper; 1s., cloth.

JOHANNES FIBIGER.

IN Prof. FIBIGER, whose death is announced from Copenhagen, experimental medicine loses an exponent whose work opened a new chapter in research on cancer. His association with this disease was at first almost accidental, and before the war he was known primarily as an authority on the pathology of tuberculosis, which he had studied since his appointment to the chair of pathology at Copenhagen in 1900. It was, indeed, whilst inoculating tubercle bacilli into rats that he first observed unusual growths in the stomach of these animals. Gastric cancer in the rat had never been seen before, the coincidence of finding three cases together was remarkable, and FIBIGER set himself to discover its cause. Microscopic examination eventually revealed the presence of an unknown nematode worm in the centre of all three tumours, and by now the investigator's genius was thoroughly aroused. First he carefully examined an immense number of rats to find a similar growth, but without success. Then he discovered in the literature a report that nematode worms were sometimes found in the stomach of rats fed on cockroaches; but here again he was met by defeat, for in the laboratory he could not reproduce the phenomenon. At last he heard of a factory where there was an abundance both of rats and cockroaches, the latter being *Periplaneta americana* instead of the more usual *Stilopyga orientalis*. In this factory, it was discovered, many of the rats had gastric cancer, and the cockroaches, which came from the West Indies, had nematode larvæ in their muscles. The life-history of the worm was thus demonstrated, and by feeding other cockroaches on eggs obtained from the fæces of infected rats, FIBIGER was able to secure a supply of cancer-producing parasites for himself. Thus the lucky discovery was turned into a valuable means of advancing knowledge, for until it was made no method had been known by which cancer could be regularly induced in animals de novo. The work on irritation thus begun was carried on not only by FIBIGER himself with great skill, but also by a host of other investigators whose pursuit has had results of the utmost importance. The honours and distinctions which he received, including the Nobel Prize for Medicine in 1926, were won with the approbation of those best capable of judging his services, and we are glad to think that in England these services were given grateful recognition. His death at the age of 61 will be greatly deplored, but work on the lines he laid down is continuing all over the world.

Annotations.

"Ne quid nimis."

MENTAL DISABILITIES AND PREMATURE BIRTH.

THE question is often asked whether prematurely born infants are at any disadvantage, compared with others, once the immediate dangers of their condition have been overcome. And if this is answered in the affirmative, the problem remains whether the defects they show are due, on the one hand, to their prematurity, or, on the other, to the unknown factors by which that prematurity was caused. For many years Dr. Carl Looft has been engaged in searching for an answer to the first of these questions, in so far as it bears on the nervous system. The first step in his investigation, which is referred to in *Acta Pædiatrica Scandinavica* (1927, vii., 15), was to estimate the intelligence of 38 premature children, and he found that some three-quarters of them showed retarded mental development. This was certainly striking, but its exact significance remained uncertain because all the children examined proved to be rickety, an association of rickets with prematurity being, he says, the rule rather than the exception. As a further stage in his investigation he got histories of all premature infants born in Dr. Petersen's clinic at Bergen from 1910 to 1916. After excluding twins, and infants weighing over 2·5 kg., there were still 91 children in the series, and he managed to trace seven survivors of them in the schools in 1920. All seven showed some degree of mental retardation when tested by the Terman scale, and their intelligence-quotients ranged from 87 to 57. In the course of eight years Dr. Looft has also examined 532 backward (non-syphilitic) children attending *ordinary* schools at Bergen, and has found that there were 5·5 per cent. "in whom the cause of the intelligence defect could only have been premature birth." The interesting summary of their histories shows that here again the picture is complicated by a very high incidence of rickets. The series included two cases of Little's disease, one case of tremor of hands, and five children who had been born in asphyxia. Among 105 premature children seen in Dr. Looft's practice in ten years there were, he says, 19 cases of Little's disease (the term is here applied to cases with evidence of pyramidal, extrapyramidal, or cerebellar lesions) with some degree of mental defect or retardation. There were also ten cases of mental defect without evidence of lesions, and three of epilepsy. Syphilis is said to have been excluded in all of them, and a psychopathic family history was only obtained in one. Lastly, an analysis of the histories of imbeciles sent to the special schools showed that about 9 per cent. of them had been prematurely born.

Dr. Looft believes with some of our own prominent pædiatrists that the influence of syphilis as a cause of prematurity has been much exaggerated, and he lays stress on the importance of P. Schwartz's observation that the cerebral vascular lesions found in syphilitic stillborn infants are precisely the same as those found in others. He is a convinced adherent to the view that the principal factor in the ætiology of cerebral diplegia is hæmorrhage, whether meningeal or intracerebral, and he also supports Schwartz's mechanical explanation of the production of these hæmorrhages during labour, and attributes their frequent occurrence in premature infants to the fragility of the vessel walls, in which the elastic tissues have not fully developed. In maintaining this opinion he is on firm ground, and will probably be supported by an increasing number of authorities. In an attempt to apply the same idea to the origin of mental defect, his argument, though suggestive, is by no means so convincing. To begin with, few other observers have obtained so little evidence of psychopathic family history in mental defectives. A common association between prematurity and mental defect is certainly suggested by the facts he brings forward, but his contention that the defect was the result of prematurity is not always borne out by the accounts of individual cases. In two of his series, for instance, there are cases of microcephaly, a condition in which the morbid process seems to begin at an early stage of fœtal life; this form of amentia might be the cause, but hardly the effect of prematurity. It must be granted, however, that our acceptance of birth trauma as the cause of spastic diplegia predisposes us towards believing that mental backwardness may be due to damage to association areas. Certainly Dr. Looft's investigations are of the kind that should throw light on this important problem.

THOSE OTHER PRACTITIONERS.

DESPITE the advance of scientific medicine many kinds of quackery still stand high in popular esteem, and in his address on "Those Other Practitioners" to the Abernethian Society of St. Bartholomew's Hospital on Jan. 26th Lord Dawson touched on problems that are of real importance to the profession. He began by pointing out that a quack and an unqualified practitioner are not necessarily the same thing. A quack is "a man who makes baseless and boastful pretensions for a method of treatment," and the deception may be practised primarily on himself rather than other people. According to this definition there are quacks in the ranks of the orthodox profession, whilst unregistered practitioners can be free from the reproach. Many of these *ξένοι* employ moreover what, applied under the right conditions, are sound and helpful methods of treatment; but they must be distinguished from the qualified doctor because they have not had years of training both in science and clinical medicine, without which diagnosis is liable to unnecessary error. Diagnosis affords the one stable criterion, and diagnosis, as Lord Dawson emphatically pointed out, must always precede treatment. The latter is, of course, not a monopoly of doctors; it is the expression of an instinctive desire in all men to relieve suffering in themselves or others. To-day, said Lord Dawson, the field of treatment is bounded on one side by the ordered territories of science, but on the other side there is no boundary; it shades imperceptibly into the uncharted regions of mind, faith, and superstition, in which the unqualified practitioner finds his hunting-ground. The histories of quacks like Elisha Perkins, Mesmer, and Coué, of whom he gave an interesting account, show an almost exclusive reliance on their patients' suggestibility. The osteopath employs manipulation as well, and his gifts in this direction are often valuable when controlled by diagnosis, though they may be highly dangerous in its absence. Similarly suggestion, when directed against functional disorder, is useful. It is only when it is divorced, as in some forms of faith-healing, from other methods of treatment, and when its claims go beyond the facts to embrace developed structural disease, that it becomes pernicious. The necessity for keeping all forms of psychotherapy within the bounds of diagnosis increases, the lecturer urged, from day to day. As man's adaptive capacities are outstripped by the material resources of civilisation, there is an increased incidence of psychogenic disorders, especially those known as "exhaustion states." Patients suffering from emotional exhaustion do much better when their attention is directed to a real physical treatment, while such mind-healing as they require is carried on unobtrusively. "An exploratory operation on the mind does not heal by first intention except in delicate hands," said Lord Dawson, and psycho-analysis, so useful in some cases and fraught with such danger in others, should be kept in the hands of a few highly skilled and temperamentally qualified persons; like every other form of treatment, it should be directed by the clinician, and should be based on sound and accurate diagnosis.

The main contention of an interesting address was that the true physician must possess the gift of healing both body and mind. The difference between the orthodox practitioner and "those others" is an equipment of traditional learning and ethics which not only fosters this gift but enables it to be most effectively employed for the benefit of mankind.

TUBERCLE BACILLI IN BOVINE FÆCES.

In order to study the incidence of tubercle bacilli in the fæces of dairy cattle, Dr. Stenhouse Williams and Mr. W. A. Hoy [1] examined samples taken from 438 apparently healthy cows in five English counties. Of these samples 337 were treated by the antiformin method and 101 by Petroff's method; in each case 1 ounce of fæces was treated and two guinea-pigs were inoculated from the sediment obtained. Neither method completely eliminated the danger of "septic" infections in the inoculated animals, and the test was not regarded as complete unless the guinea-pigs lived longer than 42 days; when possible they were kept for 100 days before being killed. Of the 391 completed tests 6 (1·53 per cent.) gave positive results, living and virulent bacilli being evidently present in the fæces. Nearly all the 391 samples were taken from cows that had not been tested with tuberculin; the exceptions were 24 cows which were known to be reactors, but (as it turned out) had no tubercle bacilli in their fæces. Examination of the records showed that five of the cows excreting tubercle bacilli came from four farms lying within a radius of three and a half miles. Since not more than one single ounce of fæcal matter from each cow was examined, and since later experiments have shown that the bacilli are excreted at irregular intervals, and that antiformin has a variable influence upon their virulence, it is probable that the tests show too small a proportion of positive results.

BACKACHE.

In commenting on a paper on sacro-iliac subluxation we recently remarked that orthopædic surgeons of repute, not only in America but also in Great Britain, seemed to have had very various experience of this condition. Somewhat similar thoughts are aroused by a suggestive communication to the *American Journal of Surgery* (1927, N.S., iii., 523), in which Dr. F. H. Albee deals with cases that may conveniently be grouped together under the homely name of backache. As a surgeon whose name is especially associated with valuable work on autogenous bone-grafting, Dr. Albee might perhaps be expected to advocate radical operation, but in fact he recommends its restriction or abandonment in favour of gentler measures. He begins by offering a pathological explanation of many apparently dissimilar conditions which are generally labelled lumbago or sciatica or (in America) sacro-iliac strain, and which he would like to see grouped together under the name "myofascitis" which he has coined to describe them. To this suggestion there are, we think, manifest objections. In the first place, its adoption would imply the existence of an affection of muscle-fibres in favour of which there is no pathological or anatomical evidence, and in the second place the term "fibrositis," which has been in use for a good many years, is applicable to the group of symptoms in question and is free from some of the objections offered to "myofascitis." It seems a pity, moreover, to burden medical nomenclature with a new Græco-Latin hybrid unless it is absolutely necessary. Dr. Albee has become convinced that a large proportion of those cases which are by some surgeons in America diagnosed as sacro-iliac strain are in reality due to "myofascitis," the chief symptom of which is "pain at bony insertions elicited by tension on the involved muscle or fascia." Many of his cases had been treated for sacro-iliac relaxation and had relapsed, and he states that at least 90 per cent. of the cases of "low back pain," "lumbago," "sacro-iliac strain," and "sciatica" which have been referred to him under these diagnoses are on more comprehensive analysis instances of myofascitis, to which disorder he applies that overworked term "a clinical entity." It is really due, he considers, not so much to local injury as to faulty metabolism and absorption of toxins from the large intestine, and since reaching this opinion he has treated all such cases in which no anatomical lesion can be demonstrated by lavage of the colon, implantation of *Bacillus coli*, and restriction of proteins in the diet. In 40 cases which he tabulates the results are reported as from "good" to "excellent," except in two in which the treatment was not properly carried out and one other in which it had only just begun.

In the paper which follows Dr. Albee's in the same journal (p. 534) Dr. H. Lusskin and Dr. H. Sonnenschein, of New York, reassert the reality and frequency of sacro-iliac subluxation and arthritis, and advocate therapeutic measures similar to those recommended by Dr. D. Hoyt Cox, on which we commented some weeks ago.[1] They make no allusion to any treatment directed towards improving metabolism, and in many ways their communication is in strong contrast to that which immediately procedes it. Like many other American surgeons they find that the application of adhesive strapping is often efficacious, but in severe and resistant cases they advocate fixative operations. They say that "all patients" with this form of sacro-iliac disturbance "have aggravated weak feet." On the basis of such experience as has hitherto been recorded in this country it is difficult to decide whether the latest views of Albee, or his earlier ones, and those held by Lusskin and Sonnenschein most deserve acceptance. The sins of the human colon seem to be brought home to it with increasing emphasis as time goes on, and if Dr. Albee's last indictment results in the finding of a true bill it will furnish an additional argument for Sir William Arbuthnot Lane's attacks upon stasis.

DIPHTHERIA CARRIERS.

It has long been recognised that diphtheria carriers may discharge bacilli intermittently, and three negative examinations are usually required before a suspect may be discharged. F. H. Thomson, E. J. Mann, and J. E. McCartney [2] showed that examinations should be continued at least once a week for the first fortnight of the disease and thereafter twice weekly for three weeks. Only when six consecutive examinations had been negative could the patient be declared free. In a recent investigation into carriers, described to the Epidemiological Section of the Royal Society of Medicine on Jan. 27th, Dr. McCartney and Dr. W. C. Harvey found it necessary to study the intermittent periods very carefully. Attempts to cure a carrier may coincide with one of these periods and convey a false impression of the result. They did not consider a carrier free unless six consecutive tests spread over six weeks were all negative, and illustrated by their charts, shown on the screen, the necessity for this rigid standard. In one carrier five examinations were negative over a period of two and a half weeks, and bacilli appeared again at the sixth test. Another patient gave four consecutive negative results, then one positive followed by eight negatives. As the tonsils were large they were removed, after which the throat cultures yielded two positive results; then the nose gave one and then both remained clear. The work was carried on in the M.A.B. hospitals, and 350 carriers have been examined, swabs being taken twice weekly from the throat, each nostril, and, if necessary, from the ear. Loeffler's serum medium and a modification of Pugh's stain were used to identify the organisms, and virulence was tested by intracutaneous inoculation into the guinea-pig. The term "carrier"

[1] Journal of Hygiene, November, 1927, p. 37.

[1] THE LANCET, 1927, ii., 1302.
[2] Annual Report, M.A.B., 1925–26, p. 130.

was only applied to persons who harboured virulent diphtheria bacilli 12 weeks or more after the onset of the clinical disease. In addition, every patient was examined for abnormalities of the upper respiratory passages by Mr. Humphrey Marriner. Most of the carriers (94·8 per cent.) showed some abnormality; crusting of the nasal mucosa, enlarged tonsils or turbinates, adenoids, or deflected septum. It was found that the presence of these conditions coincided with a prolonged carrier state, and that those who had affections of ear and nose, as well as of the throat, carried longer than those with one or two lesions only. An examination of 300 unselected diphtheria convalescents served to point the moral. The proportion with healthy respiratory passages was much higher (27 per cent.), and none of them had any ear trouble. Of the 300 13 became carriers, and all of these had some clinical abnormality. Another control group was provided by 100 patients free from bacilli and ready for discharge. 48 per cent. of these had nothing wrong with their noses or throats, and the nose was affected in only 3 per cent. The majority had large but healthy looking tonsils, showing that enlarged tonsils do not in themselves hinder the natural elimination of diphtheria bacilli. The majority of carriers were between 1 and 5 years of age, so that the difficulties of examination and treatment were very great. It seems quite clear, however, from the results of these investigations, that the liability of young children to nasal catarrh with blocking of the passages is the reason why they tend to become nasal carriers. When the nares have grown larger there is less likelihood of crusting and so of the formation of pockets of inflammatory material. This corresponds very closely with the results of Dr. J. A. Glover's work on carriers of the meningococcus. Chronic carriers nearly always had some nasal defect, as he reminded the audience at this meeting, and most commonly an obstinate contact between the posterior end of the inferior turbinate and a deflected septum.

The interesting discussion which followed Dr. McCartney's paper revealed general agreement with his findings. Dr. R. J. McCann, of the Guy's Diphtheria Clinic, agreed that the nasal condition is of primary importance, and Dr. W. S. Copeman sounded a warning against indiscriminate tonsillectomy as a cure for carriers. He had investigated a number of tonsils removed for this reason at Great Ormond-street Hospital and had never found diphtheria bacilli beneath the surface. Only the pure tonsil-carrier, as Dr. McCartney agreed, benefits from the operation. Dr. Graham Forbes, recalling the increasing incidence of carriers and the probability that such an increase precedes an epidemic, remarked on the inadequacy of the efforts at present made by the London County Council to deal with the carrier. Here was another aspect of that much discussed little person "the pre-school child." Whether or no Dr. Forbes's sense of inadequacy is justified seems to be a pretty problem. A group of fever hospital superintendents, headed by Dr. E. W. Goodall, dared to defend the status quo. "Do these tests substantially lower the return case rate?" they pertinently asked (the rate is under 2 per cent. as things are). Dr. Goodall said that he had always felt anxious about discharging patients with abnormalities of the nose, but had not observed any serious results. Dr. J. D. Rolleston said that there had been no increase in the number of return cases in his district during the last two years, although he had given up routine cultivation of swabs. Dr. E. H. R. Harries [3] has shown that the carrier-rate can be reduced to negligible proportions without prolonged routine testing. Dr. McCartney, in reply, admitted frankly that he was not concerned with the practical aspect; he and his colleague had wanted to collect some facts about diphtheria carriers and had done so. Whatever superintendents may decide to do in the matter, there remains a very practical lesson in preventive medicine. Rhinitis was a constant feature in all the cases examined; in fact, Dr. Harvey does not think that carriers harbour bacilli in living tissues at all, and the general improvement coinciding with the cleansing of the filthy nose was most striking. It is reasonable to suppose that many cases of diphtheria, meningitis, and, probably, other conditions could be prevented altogether if mothers and nurses could be taught to keep the nasal passages of small children clear by thorough cleansing of the nostrils and the daily introduction perhaps of a drop or two of some simple antiseptic oil.

[3] THE LANCET, 1927, ii., 646.

ASTHMA AND AFFECTIONS OF THE SKIN.

A RELATIONSHIP between diseases of the skin and asthma has long been known to exist, and a recent study [1] by Dr. K. H. Baagöe, of Copenhagen, has added to our knowledge of this relationship. His material consisted of 124 asthmatics, 92 of whom were children, the remaining 32 being adults. Among the 124 patients there were 74 with a history of some skin disease such as prurigo, urticaria, pruritis or local œdema. Among 35 suffering from infantile or Besnier's prurigo, there were as many as 32 who gave a positive reaction to cutaneous tests, 29 to feathers, 10 to hair, 14 to foodstuffs, and 5 to pollen. Only in three cases was there a doubtful or negative reaction. Cutaneous tests carried out in 32 of the 34 cases of urticaria gave a positive reaction in 25 cases, in 22 to feathers, in 9 to hair, in 8 to foodstuffs, and in 7 to pollen. Cutaneous tests were also carried out in all of the 14 cases of pruritus, the reaction being positive in 9 of these cases. With regard to the six cases of local œdema, which most frequently affected the face, lips, and mouth, it was possible to demonstrate a relationship in four of them between the œdema and the patient's idiosyncrasy to certain substances such as eggs or fish. All six patients gave a positive skin reaction, 5 to feathers, 3 to hair, 3 to foodstuffs, and 3 to pollen. Altogether 57 out of 70 patients with diseases of the skin submitted to cutaneous tests gave a positive reaction. Only in 13 cases (11 children and two adults) were the reactions doubtful or negative. Among 50 other asthmatics (35 children, 15 adults) with no skin affections, there were 30 giving a positive cutaneous reaction. Unfortunately no control observations were carried out to show whether the skin diseases already referred to were as common in persons without asthma as in asthmatics. But, as Dr. Baagöe points out, there seems hardly to be any reason to doubt the existence of a common ætiological factor in those cases in which the skin disease broke out in conjunction with the asthmatic attack. The establishment of an ætiological relationship is, of course, more difficult when a cutaneous eruption occurs independently of an attack of asthma, perhaps even at a time when the patient has not yet had any attack of asthma. Dr. Baagöe points out that the skin diseases he has observed in connexion with asthma have the following features in common: they occur in paroxysms, are characterised by hyperæmia, œdema, and itching, and are frequently, if not always, due to some idiosyncrasy. With this common denominator it is natural that these diseases should be classed in one group as allergic or idiosyncratic diseases of the skin.

[1] Acta Medica Scandinavica, vol. lxvii., Fasc. iii.

THE EMPLOYMENT OF TUBERCULOUS PATIENTS.

THE question of how to deal with tuberculous patients after their discharge from sanatoriums, especially those following unsuitable occupations or living or working in unsatisfactory conditions, is one of the most difficult of all the problems connected with tuberculosis and one for which no general solution has yet been found. A large number of schemes have been tentatively brought forward from time to time, chiefly in this country and in America, but most of these are impracticable from an economic point of view, while others can at best deal only with a small fraction of the patients. The subject was brought up at the recent meeting of the Tuberculosis Society (an

account of which will be found on p. 233), but no new solution was arrived at, and the only scheme brought forward was one for teaching the patient while in the sanatorium a trade which he could afterwards carry on in his own home, the necessary tools and raw materials being provided. The cost of such a scheme would, however, obviously be prohibitive on a large scale, and on the whole the training of adults in a new occupation, regarded as suitable on medical grounds, has not proved of much value.

In a report by Dr. F. N. Kay Menzies [1] the whole subject is discussed afresh, and although Dr. Menzies has no new policy to bring forward the conclusions arrived at and the data on which they are founded are of considerable interest. He points out that during the war, "when work and good wages were obtainable by anyone capable of doing any work, the unemployed tuberculous problem disappeared," and he believes that a wave of prosperity, resulting in a demand for labour, would again lead to the widespread absorption of tuberculous labour, even though the working capacity of tuberculous persons whose disease is not arrested is not more than 50 per cent. of that of a normal person. Under special conditions—e.g., types of employment which call for little physical effort, short hours, and hygienic environment—tuberculous persons are capable of working, but Dr. Menzies makes it abundantly clear that "under any circumstances, a commercial undertaking employing tuberculous employees and paying a wage adequate for their maintenance cannot be run without considerable financial loss and must be subsidised in some way." A critical examination of possibilities of employment by private employers or in specially selected jobs under public authorities, or in workshops and undertakings specially organised for the purpose, suggests that an industrial settlement run in connexion with a sanatorium is more easily organised than an independent workshop, but Dr. Menzies finds that such settlements are not only costly to establish, but they are also definitely limited in regard to the number and character of the cases for which they are suitable. Moreover, their extension on a large scale may, he thinks, prejudice the few which have already attained a measure of success. It is disappointing to learn that "it has not so far been found possible to provide the benefits of regular work at a cost which allows of an employment scheme being considered as a practical policy for general adoption," the most that can be said being that, with careful management, a certain number of selected cases could possibly be employed at a cost less than that entailed by their complete maintenance out of the rates. Wherever possible Dr. Menzies urges that a tuberculous person should seek for an employment for which his previous experience fits him, the best course, as a rule, being his return, perhaps under modified conditions, to his usual employment.

Vocational training does not seem to have been a success, judging from the general opinion of tuberculosis officers and others. Such training in skilled or semi-skilled occupations may possibly be justified in exceptional cases or in special circumstances, but Dr. Menzies considers it unlikely to be of practical value as a part of the organised scheme for dealing with tuberculosis throughout the country. The teaching of simple handicrafts, however, in sanatoriums and tuberculosis dispensaries is valuable as a means of usefully employing the time of the patients and of diverting their minds, even where such occupation is of no economic value. The question of the employment of tuberculous women is carefully gone into. Dr. Menzies believes that a workshop for such women on the lines of the Altro workshops in America would be worth consideration, another satisfactory course being the employment, where possible, of women ex-patients in domestic and other duties in connexion with sanatoriums and similar institutions. Dr. Menzies recalls that in 1926 the Metropolitan Asylums Board were obliged to postpone opening an institution for advanced cases of pulmonary tuberculosis on account of the difficulty of obtaining nursing staff, partly owing to fear of infection. It will be remembered that the Ministry of Health, in a circular issued in December, 1923, laid down a scheme for coöperation between the managers of the various employment exchanges of the Ministry of Labour and the tuberculosis officers, with regard to the employment in suitable occupations of male patients on discharge from sanatoriums or hospitals. The scheme does not appear so far to have shown many good results, possibly owing to the large amount of unemployment in the country at the present time. Very few of the metropolitan borough councils would appear to have utilised the scheme to any extent, judging from a summary, given in an appendix to Dr. Menzies's report, of replies from several of these councils to a circular letter sent out in July, 1927, inquiring as to the working of the scheme. Reference may be made here to a paper by Dr. John F. Russell, which was published last year,[2] in which the writer argues that working people cannot as a class be treated successfully at sanatoriums owing to the prohibitive cost, both to patient and to institution, of a sufficiently prolonged period of treatment. He urges that municipal dispensaries might be utilised in the place of sanatoriums, thus allowing the patient to live at home, to carry on his regular full-time work—where his physical condition allowed it—when, because the cost to the community would be small, he could continue treatment indefinitely. The writer points out that the mental and physical strain is much greater in working at a new and unfamiliar occupation than it is in continuing a usual one; in the latter case the exercise necessary to continue work is habitual and the body has acquired tolerance. While Dr. Russell is not prepared to say that this method would be best for all classes of patients with pulmonary tuberculosis, he is convinced that it is the only method available for the proper and continuous care of tuberculous patients of the labouring classes.

The whole question is big with difficulties, but one thing, at any rate, is certain: that, in Dr. Menzies's own words, every factor which tends to bring tuberculous persons under treatment when the disease is still curable diminishes the flow of patients into the ranks of the unfit and unemployable. The advantages of early diagnosis, followed by treatment sufficiently prolonged to bring about full restoration of health and working capacity cannot, therefore, be over-stated.

[1] Published by the London County Council. No. 2545. 1928. 1s.

A SHOCKING FILM.

SOME of the difficulties inherent in propaganda against venereal disease are illustrated in a film called the Dangers of Ignorance now being exhibited for Wardour Films, Ltd., at the Court Cinema, Tottenham Court-road, London. The producers have aimed at preaching "a powerful human sermon dealing with the social evil which is undermining the physical and mental health of the nation," and their attempt has won the approval of the Central Council for Health and Education set up a few months ago by the Society of Medical Officers of Health. It thus bears an official medical cachet, and we are informed that a proportion of the takings is to go to the Council's funds; but exhibition of the film is due to private enterprise and the public is encouraged to see performances by descriptive "catchlines" such as "a medical picture visualising the terrible havoc resulting from pandering the sexual passions . . ." "depicting cold scientific demonstrations on the horrors following in the train of venereal disease." When this has been said it must be admitted that the general tone of the production is good and that the instruction is both clear and convincing.

The film is divided into four parts, in the first of which we are introduced to a couple of ignorant youths at a "fair" resembling the amusement park at Wembley. Seeing them solicited, a watchful

[2] American Review of Tuberculosis, 1927, xvi., 145.

stranger directs their attention to a pavilion labelled "sexual diseases" where an elderly lecturer is giving an account of the damage done by gonococcal infection. The captions accompanying his address are often too technical for a lay audience, making free use of words like "mucous membrane," but the point of his teaching can hardly be missed by anyone who keeps an eye on the models that show the manner in which the organisms reach their various locations in the human body. The genital tract is seen in sagittal section and gonococci, neatly paired and the size of small beetles, make their way with terrifying precision into the anterior and posterior urethra, the prostate, epididymis, bladder, uterus, or Fallopian tubes, according to the stage reached by the lecturer in his argument. Further models show the mechanism of infection of the mucous membrane, the reaction of the tissues, and the formation and spread of pus. The technique of their construction is so good that the photographs would not come amiss in a lecture to medical students. Particularly effective are those which show cicatrisation in the epididymis and Fallopian tubes, leading to sterility, and the lesson that treatment must not be abandoned before cure is brought out with all possible emphasis. Reiteration of the same lesson continues throughout the rest of the film, which tells the stories of a number of people who have contracted venereal disease. The first, a young student, is attacked by gonorrhœa after visiting a prostitute. Fortunately he meets a venereal specialist and his case is early taken in hand, so that after a fortnight no more cocci can be found in his urethral discharge. He is then inclined to laugh at the idea of further treatment, but the laugh is turned to a prayer after the doctor has taken him round his private wards to see the plight of those whose disease is chronic, and the damage which they can inflict upon women and children. Models are again invoked to show how gonococci get into the blood stream, and patients with arthritis and endocarditis are shown to point the moral. Finally the student asks what he can do, when cured, to prevent this loathsome infection ever occurring again, and is told that there is only one sure safeguard—complete abstinence from promiscuous intercourse. That such abstinence is desirable from the point of view of innocent third parties is the message of the next section of the film, in which a baby is found to have developed a syphilitic chancre by contact with his nurse. She in her turn has been infected by a man in the park who told her that "there's no harm in a kiss," and gave her one. The disease has been allowed to reach the secondary stage because she put herself under the care of an imposing quack, and the net result of her ignorance is to infect a child and throw her out of occupation. The doctor gives her domestic work in his hospital, where she has ample chance of seeing, ad nauseam, the late effects of her disease. Their horror is further rubbed into the audience by the fourth part of the film, whose scene is laid in the familiar mortgaged homestead of cinema-land, but departs from type in that the farmer is a physical wreck, has no children, and has had to watch his wife develop G.P.I. as a result of his early indiscretion. Her destructive mania wrecks the home, and they are taken to the poorhouse. Their sole support, a niece, goes to the city, gets work in a draper's, and is seduced by a young man who gives her syphilis. The rest of the film is devoted to her efforts, under medical influence, to induce him to go on with treatment for the necessary period of years. In this she is at last successful, the doctor approves their union, and the story ends a year later when the grateful parents bring a healthy child to receive his blessing.

Enough has been said to show that powerful arguments are presented in favour of early and complete treatment. Fear is the instrument used to gain this object, and there is no doubt that it is often effective. On the other hand, it is easy to produce more of this emotion than is strictly necessary and to associate it too widely. It is a mistake, for instance, to imply that kissing is a common means of conveying syphilis; the section in which a nursemaid lapses in this way and thus becomes responsible for infecting a baby is likely to cause an immense amount of anxiety among girls and boys who have kissed a stranger and will do so again. The minds of young people are already too often disturbed by fears relating to sex, and there are too many morbid obsessions about microbes. In general the public needs to be taught about health rather than disease, and it would be unthinkable if films were exhibited to show the ravages of all the diseases which different medical authorities regard as preventable. In the case of syphilis and gonorrhœa, however, there is exceptionally good reason for instruction about the results of untreated infection and about the way in which this infection is conveyed. The instruction must be emphatic, but it loses nothing by leaving a good deal unsaid. Information on these subjects is better conveyed individually than to large audiences, but the good done by showing such a film as the Dangers of Ignorance probably more than compensates for the bad. It would, however, gain by considerable curtailment of the pathological items. We note that, unlike the ordinary erotic drama, it is shown to men and women at separate performances, a needless sop to sentiment, as the general effect it produces on the mind is nothing if not sobering.

THE EMPEROR FREDERICK'S FATAL ILLNESS.

IN a paper recently published in the leading Dutch medical journal [1] Dr. H. T. Deelman, professor of morbid anatomy at Groningen, describes the result of his examination of a laryngeal tumour sent to him by Prof. Burger. On naked-eye examination the growth appeared to be a papilloma, and this view was confirmed by the microscope, which showed, however, that in close proximity to the papilloma was a second small growth which proved to be a carcinoma. This case, as Prof. Deelman points out, is not only of practical importance, but also bears on a historical incident which had far-reaching consequences. It is clear that if the small tumour had not been included in Prof. Burger's incision the patient would undoubtedly have returned later with a typical carcinoma at the site of operation. The conclusion would then have been that the clinician and pathologist had both made an erroneous diagnosis and that the tumour excised had really been malignant after all. The historical interest of the case lies in its application to the last illness of the German Emperor, Frederick the Third. It will be remembered that 17 months before his death at the age of 56, the Crown Prince, as he then was, developed symptoms of a laryngeal affection. A papillomatous growth was found on the left vocal cord and was destroyed by the cautery without a pathological examination having been made. Owing to repeated recurrences in which the cautery was employed on each occasion, a diagnosis of carcinoma was arrived at, and Sir Morell Mackenzie was summoned from London to give an opinion. Mackenzie declared that the tumour was a papilloma and sent a portion of it for examination to Prof. Virchow, who confirmed the diagnosis of a benign tumour. The Crown Prince, who desired to attend Queen Victoria's Jubilee, came over to England, where conservative treatment was carried out by Mackenzie. Three months before his death Frederick became Emperor and a rapid aggravation of the laryngeal disease set in. Mackenzie finally decided in favour of the diagnosis of cancer of the larynx, but by this time it was too late for a radical operation. Prof. Deelman considers the three possible theories as to the nature of the growth. He dismisses the view that the tumour was primarily a papilloma which was subsequently transformed into carcinoma, on the grounds that such an occurrence is extraordinarily rare. The second explanation, that the growth was a carcinoma from the first, and that with the possible exception of Gerhardt all Frederick's medical attendants were mistaken, also appears unlikely. A far more probable explanation is that there were two growths, a benign and a malignant, not

[1] Nederlansch Tijdschrift voor Geneeskunde, Dec. 24th, 1927.

necessarily of simultaneous development, and that finally the cancer rapidly increased in size and in its destructive effect.

A TESTIMONIAL TO SIR DAWSON WILLIAMS.

THERE is a widespread feeling that the retirement of Sir Dawson Williams from the post of editor of the *British Medical Journal* after 30 years of distinguished service should not pass without some recognition from the profession as a whole of his great services to medical journalism and so to the science and practice of medicine. A small executive committee has been formed with the view of sending invitations to representative members of the medical profession and others having close associations with it; this precedes the issuing of a general appeal and the decision upon the form of the testimonial. Though the committee does not wish to limit the amount of individual donations, it hopes that the sum eventually subscribed will include a large number of contributions, and so represent the profession throughout the country. Sir StClair Thomson is acting as treasurer of the Fund, and cheques should be made payable to him and sent to 64, Wimpole-street, W. 1, the envelope maked "Dawson Williams Testimonial." A fuller statement will be made later in the medical press.

THE BUNDABERG DISASTER.

DURING the week reports have appeared in the daily press of the death at Bundaberg, Queensland, of 12 children "as the result of antidiphtheria inoculation." There is not sufficient information available at the moment to explain clearly what has happened. One of the doctors consulted in Australia suggests "that the serum may have become contaminated"; the absence in the cables of mention of any of the obvious diseases such as tetanus, anthrax, gas gangrene, or septicæmia likely to be caused in this way is against the hypothesis of contamination. Another suggestion is to the effect that latent properties "became active" in the prophylactic and a virulent poison developed. This phrasing leads one to suppose that a toxin-antitoxin mixture was in use. Such mixtures have been described in articles in the Australian medical press and in the only list at our disposal of materials prepared by the Commonwealth Serum Laboratories, from which the product is said to have come, toxin-antitoxin mixture appears as the prophylactic issued. The violent toxicity of the prophylactic could conceivably arise from dissociation of the mixture with destruction of the antitoxin, or alternatively from error in the filling and packing of untested or toxic material. Dissociation of toxin-antitoxin was clearly the cause of the accident in Massachusetts in 1924, when mixtures were exposed to extreme cold during unusually severe weather[1] In connexion with the Baden (Austria) misfortune in 1924, when a number of children died, two explanations were given—the issue of toxin in mistake for toxin-antitoxin, or dissociation of toxin-antitoxin mixture with resultant toxicity; Grassberger's report was in favour of the former. In a more recent Russian disaster[2] 14 children received toxin in place of anatoxin (i.e., toxoid); eight of them died within two weeks, four of polyneuritis within a month and two recovered after symptoms of general intoxication. Here there seems to have been simply human error. The cumulative effect of these accidents will no doubt be to make people inquire to what extent they are exposed in England to similar risks. The answer is one to inspire confidence in the present procedure, for it appears that almost all the immunisation in this country is carried out with toxoid-antitoxin mixture. On inquiry from the Wellcome Physiological Research Laboratories we are informed that in the preparation of this prophylactic the toxin is detoxicated with formalin until at least one human dose is not lethal to a guinea-pig. During many years' experimental work with various chemical and physical agencies and long storage it has not been possible to change toxoid to toxin. The toxoid is next mixed, as an extra safeguard, with a calculated quantity of antitoxin. Of this mixture 5 c.cm. will not kill any of five guinea-pigs injected, but will produce in the animal high immunity. As a confirmatory test, the toxoid-antitoxin mixture in the form in which it reaches the patient must be so devoid of toxicity that 1 c.cm. taken from each size of phial filled from each bulk bottle will fail to produce any symptoms in guinea-pigs kept under observation for ten days. These tests are more exacting than the minimum prescribed by the Therapeutic Substances Act, the main provisions of which are already in force. It would appear that there need be no hesitation in offering prophylactic immunisation to all who desire it here.

[1] Glenny, Pope, Waddington, and Wallace: Jour. Path. and Bact., 1925, xxviii., 473. [2] Bull. Hygiene, August, 1927, p. 667.

"FRIGHT DISEASE" IN DOGS.

MUCH attention is now being paid to a curious canine disease which in the last 12 months has increased in this country to an alarming extent. It is seen especially among sporting dogs and packs of hounds, and the owners of affected dogs, in describing the symptoms, have repeatedly remarked that the animal seems suddenly to have seen a ghost. Although to all appearances in perfect health, it gives a curious howl of fright and rushes away, often without any apparent idea of direction, in a state that seems to be terror. This condition may last only for a few moments, recovery being almost as rapid as onset, but on the other hand, it may be half an hour or more before the animal recovers its normal appearance. The cause has not yet been determined, and Prof. F. T. G. Hobday has issued an appeal to the public for funds, wherewith scientific research on the disease can be conducted at the Royal Veterinary College, of which he is the principal. At the present time the treatment which has been found most successful is removal of all biscuit from the dietary, combined with keeping the patient as quiet as possible for at least ten days or a fortnight, and the administration of nerve sedatives. The proportion of actual fatalities from the disease itself is negligible, but the appearances are very alarming, and dogs have sometimes injured themselves severely by violent collisions in the course of their frantic movements. The condition is said to have been observed first in America some five or six years ago, and it is rapidly increasing in that country. Such interesting symptoms should well repay careful study, and we hope that the necessary funds will at once be made available in response to Prof. Hobday's appeal. So far as can be judged, the disease seems to be peculiar to dogs, for veterinary practitioners assert that nothing identical with this "canine hysteria" has been observed in any other species of domesticated animal.

Mr. H. L. Eason, C.B., C.M.G., M.S., superintendent of, and senior ophthalmic surgeon to, Guy's Hospital, has been appointed to represent the University of London upon the General Medical Council.

A RECEPTION will be held in the House of the Royal Society of Medicine, 1, Wimpole-street, W., on Wednesday, Feb. 15th, at 8.30 P.M., when the guests will be received by the President, Sir James Berry, and Lady Berry. At 9.15 Colonel W. P. Macarthur, professor of tropical medicine in the R.A.M. College, will give an address entitled Some Medical References in Pepys.

OWING to ill-health Sir Arthur Chance has resigned his positions as representative of the Royal College of Surgeons in Ireland on the General Council of Medical Education and Registration and on the Irish Free State Medical Council. His place on the General Medical Council will be filled by Sir William Taylor, and on the Irish Council by Mr. R. C. B. Maunsell. Sir Arthur Chance had been a member of the General Council from 1911 to 1914, and continuously since 1915; he was a member of the Irish Council since its establishment last autumn.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXI.

THE TREATMENT OF IMPOTENCE.

IMPOTENCE is the inability to perform satisfactorily the sexual act and is a condition quite independent of sterility. An impotent man is not necessarily sterile; nor is a sterile one impotent, although failure to consummate normal coitus is naturally a handicap to fertility. Cases of impotence may be divided into two classes, *secondary* impotence in which the disability is the result of an organic lesion in the genitalia or elsewhere in the body, and *primary* impotence in which no such lesion can be found.

Secondary Impotence.

The lesions of the genitalia that may give rise to impotence are numerous, but are not often met with in practice. Amongst them may be mentioned ectopia vesicæ, hypospadias, induratio penis plastica, elephantiasis, and arrested development of the penis, the result of some such glandular deficiency as eunuchoidism. More common are those cases in which the impotence is the result of lesions situated elsewhere in the body. In this connexion diseases of the central nervous system are of the greatest importance, and for this reason every case of impotence should be submitted to a careful neurological examination in order that such diseases as early tabes and disseminated sclerosis may be excluded. It must also be remembered that the disability may be secondary to any impairment of the general health, or to such conditions as diabetes, thyroid insufficiency, and the taking of drugs. In old age it may be physiological, although men differ widely in the age at which the sexual power is lost.

Sometimes, when an organic lesion is found, it does not appear sufficiently grave to explain the impotence. As an example may be cited the impotence that may follow an infection of the genital tract or a comparatively trifling operation on the bladder or genitalia. In these cases a psychological factor can generally be discovered, the patient having developed a fear that his previous trouble may have impaired the sexual function. Such cases really belong to the type of impotence now to be discussed.

Primary Impotence.

In these cases no lesion can be found either in the genitalia or elsewhere in the body to account for the disability. The patient is usually of the psychopathic type, intelligent, introspective, emotional, and nervous. He must be carefully handled, as it is only with great difficulty that he gives his confidence, and unless that confidence is gained nothing can be done to help him. In the majority of cases his disability is only discovered after marriage, for such men are more likely than not to have been continent previously.

Careful inquiries should be made on the subject of any previous sex experience, nocturnal emissions, and the efforts that have been made to consummate marriage with their results. Sometimes the impotence will be found to have been preceded by a period of incomplete erections with premature ejaculation and frequent nocturnal pollutions. During the interrogation the patient should be encouraged to speak freely, so that an insight may be gained of his knowledge of sexual matters, and a clue obtained to his particular psychological problem.

In some cases the impotence will be found to be a symptom of a well-established neurosis, and the only method of dealing with the patient will be to place him in the hands of a competent psychotherapist. In other cases the detection of the psychological cause of the trouble presents less difficulty, and the practitioner will feel capable of dealing with it himself. Here it is possible only to give a few examples of some of the simpler problems that may be met with.

Fear is by far the commonest factor in the production of functional impotence, and sometimes the particular form of fear which is at the root of the trouble may be discovered in the course of the preliminary conversation. The majority of men have at one time or another masturbated, and not infrequently there has become linked up with the practice the fear that permanent damage has been caused entailing loss of sexual power. With such patients it is only necessary to dispel this illusion in order to cure them. Another type that is commonly met with is the patient who has been brought up since childhood to regard anything connected with sex as something that is essentially unpleasant and wrong. Any sex urge that he may have felt prior to marriage has been sternly repressed, and even when he is married, although the taboo placed on sex may have been superficially removed, the old sense of guilt still persists in his subconscious mind and inhibits coitus. In order to cure such a patient a complete change in attitude towards the whole subject of sex must be effected. This may only be achieved with great difficulty, and the help of a skilled psychologist will almost certainly be required.

It is, of course, necessary to make sure that actual impotence exists before embarking on any treatment, as a patient may easily be wrong in his conclusions. I have seen more than one patient who has mistaken the outpouring of secretion from the secondary sex glands that takes place at times of sexual excitement for an emission of semen, and has persuaded himself that this denotes premature loss and impotence.

The Partner.—It may also be discovered in certain cases that the failure to consummate marriage is due to a mechanical obstruction in the passages of the female partner, and that normal coitus can take place when this has been dealt with. Less favourable are those cases in which the difficulty offered by the partner in marriage is not a mechanical but a psychological one. Impotence may be relative—that is to say, while remaining impotent with one partner the patient would be quite capable of consummating the sexual act with another. In some cases in which impotence supervenes some years after marriage, the explanation will be found in a transference of the patient's affection to some other woman. The patient himself may not be conscious that such a transference has taken place, and yet to the doctor the true state of affairs may be obvious.

As Freud has pointed out, for the complete realisation of the sexual life two "trends" must become fixed harmoniously together—namely, the sentiments of tenderness and of sensuality. Only too frequently the fusion of these two sentiments is incomplete, so that a man may find that in his marriage he is able to satisfy his sentiment of tenderness but not his sentiment of sensuality. The handling of such cases is fraught with difficulties and at the best only a compromise can be effected.

Allied to these is a large group of cases in which the sexual act can only be carried out provided certain conditions have been satisfied. The patient himself may not be conscious of the setting demanded for the successful carrying out of the act. The investigation of any dreams that are associated with nocturnal emissions or fantasies that have been held in the mind during masturbation may indicate the direction that further psychological research should take.

Adjuvant Measures.

It will be seen, therefore, that the treatment of primary impotence is almost entirely psychological, and that not infrequently it demands knowledge that only a skilled psychologist is likely to possess. Other measures, although of secondary importance, are often useful. Whilst under treatment such

patients should be forbidden to attempt intercourse, and, if possible, should sleep in a room by themselves. As a rule, it is advisable that the medical man in charge of the case should see the wife personally in order to explain to her the reason for this change, enlist her help, and, most important of all, prevent the arising of difficulties that are only too likely to have an unfavourable repercussion on the patient himself. In some cases it will be found that the mere forbidding of intercourse acts as a stimulus. Attention must also be paid to anything that affects the patient's general health, and he should above all be cautioned against overwork. It is a common delusion amongst such persons that they can return from their offices at the end of an exhausting day and yet retain sufficient energy to carry out an act which involves the expenditure of a great deal of emotional and nervous force. In those cases in which erections occur but are associated with premature ejaculation, benefit may result from the instillation of silver nitrate (grs. x. to the ounce) into the posterior urethra through an Ultzman catheter and syringe. Electricity is useful chiefly on account of its suggestive action, and for this reason is more likely to be effective than aphrodisiacs. Tonics, cold baths, douches, exercises, diathermy to the prostate, injections of testicular extracts or other glandular products may all have stimulative value. In nervous patients and those who have completely lost confidence as the result of past failure a small quantity of alcohol taken before resuming sexual relations may produce the proper "devil-may-care" attitude that is essential to success.

Conclusion.

The majority of patients who retain memories of many failures are likely to attempt coitus when the period of abstinence is at an end in a frame of mind that is almost certain to produce failure. The sexual act, instead of being a natural and almost mechanical reaction associated with a certain amount of pleasurable sensation and emotion has become for them a test at which they are almost certain to fail. The least subsidence of erection is noted and is taken as an omen of failure, and instead of pleasurable emotion there exists a state of anxiety and fear. For this reason the first coitus attempted after treatment is a critical period, and much judgment will be required on the part of the physician in charge to prevent disaster. The patient should be told that on no account must any deliberate planning take place as to when coitus shall be attempted. The act should be entirely spontaneous, and if better erections be present in the morning on awaking than at night —as is not unlikely—coitus should take place at that time. Moreover, an endeavour should be made to induce both husband and wife to regard the question of whether coitus is or is not achieved as of secondary importance, so that the element of anxiety may be reduced as much as possible. The fear of failure and the existence of a difficult situation between the two partners are both factors that militate against success, and must, therefore, be eliminated as far as is possible. Once the act has been achieved and confidence regained, the battle will have been won, and any artificial aids that may have been used during the period of preparation can be laid on one side.

KENNETH M. WALKER, F.R.C.S. Eng.,
Surgeon in Charge of Genito-Urinary Department, Royal Northern Hospital; Surgeon to St. Paul's Hospital.

VOLUNTARY HOSPITALS AND PUBLIC AUTHORITIES. The Council of the Charity Organisation Society propose to discuss the question of the Voluntary Hospitals and the Public Authorities at a special meeting to be held at Denison House, 296, Vauxhall Bridge-road, London, S.W., on Monday, Feb. 13th, at 3.30 P.M. The chair will be taken by Lord Dawson of Penn, and the speakers will be Sir William Hamer, Dr. Graham Little, M.P., and Dr. Humphrey Nockolds. It is hoped that representatives of the voluntary hospitals and public authorities of London and Greater London will take part in the discussion.

Special Articles.

OUR HOSPITAL SYSTEM:

REALITIES OF THE PRESENT AND HOPES FOR THE FUTURE.*

BY ERNEST W. HEY GROVES, F.R.C.S. ENG.,
PROFESSOR OF SURGERY, BRISTOL UNIVERSITY.

I HAVE been greatly encouraged in upholding this thesis since I put it forward last June, by the very many medical men who have given it their support and by the very few who have come forward to defend the voluntary system. I fear the latter source of encouragement is illusory, as it is probable that a large number of people are so satisfied about the merit and stability of the system that they think it unnecessary and superfluous to defend it. Lastly, I have been encouraged by the defence put up recently by Dr. Graham Little, M.P.,[1] because so many of his admissions are fatal to his argument and because he has been driven to so many irrelevancies and inaccuracies in order to make good even such a poor case as he had. I shall refer to these points as they occur in the course of the present argument.

Definition and Description of the Voluntary System.

At the outset we are faced with the difficulty of giving a fair definition or description of the system we have to discuss. But this is imperative for any useful argument, because many hospitals having adopted other than voluntary principles, nevertheless retain the name, but confuse the issue.

What, then, are the essentials of the voluntary system? I would suggest that they may be summarised under five headings—viz. (1) free gift of land and buildings; (2) free-will maintenance by private endowment or voluntary subscription; (3) private management by donors or subscribers, or by their trustees and representatives; (4) free medical service; (5) a charity bestowed by the rich upon the poor. A sixth condition frequently occurs—viz., limitations imposed by the terms of the gift such as that the hospital is to serve a special locality, or to admit special cases, or to serve a special cult such as homœopathy or antivivisection.

Up to the beginning of the present century most of these essentials were carried out by the voluntary hospitals, but in recent years, and especially since the war, they have been so very largely modified or superseded that it may be very well argued that already the purely voluntary system has disappeared. So much is this the case that if we are challenged to say whether the voluntary system can survive we might begin by saying that in the original meaning of the term the voluntary system is already dead.

Present-day Violations of Voluntary Principles.

In the first place, maintenance by free-will gifts and endowments has had to be supplemented by various expedients. Parliament has had to make a grant of £500,000; patients themselves are required to contribute towards their own maintenance, and the sum thus contributed amounts to about 18 per cent. of the total upkeep; insurance schemes have been adopted whereby groups of workpeople are paid for during their stay in hospital; patients are paid for by poor-law or municipal authorities; and even the so-called voluntary subscriptions are now largely made up by a system of appeals, advertisements, lotteries, mendicancy, and blackmail unworthy of a great nation or of a great national service. Again, free medical service has had to be more and more supplemented by that of a paid staff. Not

* Being the opening address in a debate held by the Bath and Bristol Branch of the British Medical Association on Jan. 25th, 1928, on the subject—The Needs of the Community Require a Better Hospital Service than that Provided by the Voluntary System.

[1] THE LANCET, 1927, ii., 1275.

only have whole-time paid residents been increased and emoluments raised, but also a certain number of non-resident specialists, such as pathologists or anæsthetists, and in some places whole-time professors of medicine, surgery, or midwifery appointed. A third type of violation of the voluntary principle consists in the innovation of adding to the managing bodies, representatives of the working classes, or of the contributory insurance groups.

In all these three respects, therefore, the voluntary principle has been sacrificed, maintenance has been received from the State, from the municipal authorities, from insurance schemes, and from the patients themselves. An increasing proportion of the medical staff, including even the visiting staff, has been paid. The managing bodies have been altered in their character by the inclusion of those members who represent the recipients with those who represent donors.

Failure of the Voluntary System.

No one would seriously complain, however, about this sacrifice of the original ideals of voluntaryism if by this means adequate efficiency had been attained. But this is not the case, and every year during which energy and money are spent in trying to save the voluntary system our hospitals are being outdistanced by those of more progressive countries.

The failure of the voluntary system may be described under four headings:—

1. *It has failed to develop in proportion to the needs of the community.*—Only about 30 years ago all serious medical, surgical, and midwifery cases among the poor were dealt with by the voluntary hospitals. Now a very large proportion—probably nearly 50 per cent.—have to be treated by the municipal or poor-law hospitals. The 600 beds provided by the Royal Infirmary and the General Hospital in this city of Bristol have had to be supplemented by 600 beds at Southmead—a building of more modern construction and better site than are possessed by either of the voluntary institutions. It would seem rather futile to argue as to the relative merits of the poor-law and the voluntary hospitals. It is no longer a question as to whether we need have the former. They are here, they are increasing very rapidly in size, quality, and organisation, whilst the voluntary hospitals have had almost to stand still, the mere struggle for existence absorbing all their energies.

2. *It has failed to meet the growing need of the middle classes.*—Dr. Graham Little has admitted this so fully that I cannot do better than quote his own words:—

> "The waiting-lists for admission to these institutions (voluntary hospitals) are getting ever larger . . . a class is clamouring for treatment in voluntary hospitals which was never willing previously to consider such treatment as a possibility . . . the necessity to meet the demand of the middle class for hospital service has been very insistent."

The well-to-do and the middle classes are expected to support the poor-law hospitals by rates and taxes and to maintain the voluntary hospitals by free gifts, and having done these two things they must then seek treatment themselves in less well-equipped nursing homes and pay for this themselves. The bare recital of such a state of things will surely make us realise that there is something wrong with our hospital service.

3. *It has failed to maintain an adequate standard in regard to sites and buildings.*—I am speaking now of the country in general and our city in particular. Of course, there are a few favoured places where the voluntary hospital has been recently modernised, such as St. Thomas's or King's College Hospital in London, and also in those places where voluntary effort has been concentrated upon one main hospital such as Edinburgh, Leeds, and Manchester these institutions are first-rate. But in most places, including Bristol, the voluntary hospitals have had to be content with patched-up buildings on unsuitable city sites.

4. *Most important of all, it has utterly failed to coördinate the hospital services necessary for the community.*—This, to my mind, is the very crux of the whole matter. The voluntary hospital is an independent unit—an irresponsible charity, which is answerable to no one and responsible to nobody so long as it can pay its way. A hospital may be thoroughly bad from foundation to roof, bad in site, bad in management, but so long as its managing body can appeal to sentiment by such cries as "save our hospital," "we have treated in the last year so many thousand in-patients and so many thousand out-patients," and so long as clergy, leaders of politics, or society will lend their assistance in obtaining money then there is no power by which such a hospital can be replaced or reformed.

In the case of hospitals of essentially good quality the main object of the management is to make an independent hospital unit, rather than to coöperate with other units in providing a perfect hospital service for the community. A perfect hospital service must imply providing for all classes and all diseases. It must provide special apparatus, special departments, special practitioners, and special nurses of the best quality and in the right proportion to the need that exists for each of these things. This can only be done by unification and coöperation and can never be accomplished by multiplying special departments at many hospitals with unnecessary multiplication of apparatus and wasteful overlapping. Again and again different people, business men, hospital staffs, and university authorities have declared that amalgamation of the hospitals in Bristol is urgently needed for efficiency, economy, and progress, but the independent conservatism of the voluntary hospitals has each time proved to be an insurmountable obstacle to this reform. If the voluntary hospitals refuse to put their own house in order then they must not complain if some outside force—medical and public opinion—arises which will take their heritage from them.

Unjustified Claims.

The upholders of the voluntary system are wont to make many claims on its behalf which cannot fairly be sustained. The newspapers in particular are never tired of writing about our "wonderful voluntary hospital system" as though its superiority were universally acknowledged. But this is far from being the case. In other countries, such as Germany, Holland, Scandinavia, Canada, and America, there is not the slightest disposition to adopt the principle of voluntaryism, and what is much more significant, our own people, whether medical experts or laymen interested in hospital management, when they go to these countries to see other systems come back filled with misgivings about our own system, and they say quite plainly that if this system is not soon mended it will have to be ended. Prof. Berry, travelling in Canada and the States on behalf of Melbourne University, and Mr. Leaney, house governor of the General Hospital, Birmingham, going over the same route to advise about the new Birmingham hospital scheme, are notable examples of men brought up with knowledge and bias in favour of our voluntary system, who have been completely convinced by what they have seen, of its inadequacy.

It is claimed that the voluntary system of management is good and that it could not be sacrificed. Now this, too, I think is wrong. That the disinterested philanthropy of hospital managers is beyond all praise no one will dispute. But that the constitution of the managing bodies allows for the necessary expert knowledge of the needs of modern science, or of the needs of the community in respect to hospital service or medical education is open to question.

In the first place the majority of hospital managers are busy men, who only devote an occasional hour to hospital work. They have no previous education in medical or hospital things and neither previous to election nor during time of office do they have any experience of any other medical institution than that which they are serving. It seems, moreover, rather invidious to signal out the managers of voluntary hospitals for special praise on account of the fact that they do their work without any emolument,

because exactly the same can be said of those who serve on the guardians, the county or municipal councils. The board of management of a voluntary hospital, the board of guardians, and the municipal council can all be given unstinted praise for hard work done without fee. But every one of these bodies is defective in regard to expert knowledge, and most of all in their outlook and interest being narrowed to the management of their own institution whilst they take no responsibility for the hospital service of the community at large.

Voluntary hospital committees are actually engaged for most of their time on petty matters of detail relating to housekeeping or personnel, and any little economies that may result from their supervision is nothing compared to the terrible waste of men, women, and material brought about by the overlapping of many small hospitals doing similar work.

It is claimed that the voluntary hospital fosters research. It would be much truer to say that research goes on under much greater difficulties in our own hospitals than in the case of hospitals abroad. Dr. Little actually quotes the case of Lister, yet it is notorious that Lister did his work under the greatest discouragement in the various voluntary hospitals in which he worked in this country, but on the other hand his discoveries were quickly appreciated and systematically applied abroad; and that antiseptic surgery was in full practice in other countries when it was fighting for recognition here.

At the present time medical research is provided in our teaching hospitals in a far smaller proportion than is the case in America, our own Colonies, or in the various European countries. And, moreover, such scanty provision as does exist is chiefly made by the universities, which are themselves State-aided. Our voluntary system and the exploitation of the medical profession by the hospitals make it very difficult for young men to give themselves wholly, or partly, to medical research. In fact, it is almost impossible for a young man to get on to a good hospital staff unless he has private means, or unless he is prepared to spend all his time in coaching or some other remunerative work. How is it possible in the first place to have the choice of the best men, or to give such men as we can get, an opportunity of doing research work?

Those who uphold the voluntary hospitals are accustomed to speak of State hospitals as though such "bureaucratic" systems necessarily check research. The note of scorn is most profound when referring to Army hospitals or poor-law institutions. And yet in sober fact the Army system during the war, in some respects at any rate, did stimulate research, team-work, and organisation of treatment in a way which the voluntary system in peace time has been unable to imitate or even continue. Take, for example, the treatment of fractures. This was organised and managed by segregation of cases, continuity of treatment, and team-work, both among doctors and nurses, so that lives and limbs were saved, good methods were standardised, and young men were taught. I would venture to say that though no war exists to-day, yet a very strong case could be made out in London and all our big cities for an organisation of fracture treatment similar to that we were taught by the war. It should be decided how many beds and what sized out-patient department are needed for each city or district, probably nothing less than a 200-bed unit would be worth considering. Exactly the same improvement in results to the patient and teaching to nurses and practitioners would occur as did during the war, and yet who can be sanguine enough to imagine such a reform taking place in the present attitude of our voluntary hospitals?

The large poor-law or municipal hospitals are clearly indicated as most suitable fields for all kinds of organised treatment and medical research, if they can be provided with a staff on a more adequate scale. As a matter of fact, judged by the pages of the *British Journal of Surgery*, the staff of our poor-law hospitals do even now contribute to surgical research and literature more than the staff of many of the voluntary hospitals.

English nursing is claimed as the peculiar product of our voluntary hospitals. Dr. Little says: "We owe it to the voluntary hospitals that Sairy Gamp has been finally dispossessed by Florence Nightingale." Could any statement be more inaccurate or misleading? Surely Sairy Gamp was just as much a product of our system as Miss Nightingale, in fact more so. Miss Nightingale realised the defects of our nursing methods, but in order to find some better ideal she had to go abroad to Germany and France where she worked under certain religious orders. She came back to this country prepared to found an Order of Religious Nurses, but the Crimean War occurred and gave her the opportunity of developing her great genius. In establishing her ideas she worked chiefly and primarily with the army authorities, and again, therefore, we have to admit that it was not the voluntary system but a State organisation which enabled Florence Nightingale to demonstrate and perfect her nursing methods.

That the voluntary system ensures a specially kindly relation between the medical staff and the patient, and it is stated or implied that in other hospital systems and in other countries this relation is less happy. We are told a great deal about such vague things as "atmosphere," "sentiment," "humanity," and the "spiritual aspect." But most of these vague statements are either irrelevant or untrue. Most of us have served in voluntary and military hospitals at the same time and we know that not only was the relation between our patients and ourselves just as cordial at the latter, but also that patients greatly preferred being in the military to the civil hospitals.

In this connexion I must quote a sentence from Mr. Leaney's article, which ought to be read by all interested in this subject:—

> "I will go further and say that I do not think that we show as much consideration for our patients in our organisation as we ought, and not as much as I have seen myself in other countries."[2]

There are at least two points on which our voluntary hospitals have much to learn in this very respect from hospitals in other countries and especially from those in America and Canada. In the first place, the out-patients ought to be given much greater consideration in regard to the matter of waiting for hours to see the consultant. Each ought to receive an appointment card specifying a given time so that as in the case of private consultations he should not have to wait for a long period. And again the home life and social circumstances of the poor patient ought to be a matter of organised inquiry, so as to ensure proper after-care and a follow-up of results.

Essentials of a Good Hospital System.

In conclusion the following may be briefly formulated as some of the essentials of an efficient hospital system:—

1. Management of the hospitals by the people for the people, including all classes of the community who are to use them.

2. Maintenance by an extension of the present Insurance Act. Maintenance of any who do not come under the Insurance Scheme to be paid for by themselves or by the county or the municipality.

3. Capital outlay for land and buildings to be provided for (*a*) by the use of existing buildings and sites, the sale of which in many cases would produce large sums of money and enable better sites to be obtained; (*b*) by State and county grants.

4. Effective fusion, coördination, or coöperation between all hospitals of every kind and variety in given areas. This fusion must be under the control of the Ministry of Health.

5. State aid without State control. This principle is already well established in the maintenance of many of our universities.

[2] On the Future of the Voluntary Hospitals. By A. H. Leaney, House Governor, General Hospital, Birmingham. The Hospital Gazette, January, 1928, p. 9.

OCCUPATION, HEALTH, AND MORTALITY

IN THE LIGHT OF THE REGISTRAR-GENERAL'S DECENNIAL SUPPLEMENT.

ONLY by reference to records, which usually take the form of mortality statistics, can the influences exerted upon the human frame, for good or for evil, by climatic conditions, by social status and customs, or by occupational environment, be disclosed and evaluated. Difficulty, however, arises in amassing sure and certain facts from which to draw deductions; but, on the other hand, the "average" human body is a delicate and reliable reagent, most proper for mankind to study. Comparison of race with race, of country with country, of urban with rural peoples, or of town with town, each uncovers differences of interest and importance. But no comparisons reveal such contrasts, challenging attention and declaring causative risks, as appear when social classes are envisaged and occupations are investigated.

This statement is borne out by a decennial report just issued by the Registrar-General[1]; it is the eighth since the series was started by Dr. Farr in 1851 and deals with the mortality of males in the years 1921–23 in five social grades and in different occupations in England and Wales. It differs from its forerunners in presenting, as well, the fertility of these men and the mortality of their infants; further, it distinguishes occupations for the first time on purely occupational lines, so accentuating the real differences between the mortalities. No longer is a group, exposed to some risk, diluted by others, industrially related, but not subject to the risk; for example, managers are no longer included with operatives; coal hewers are separated from others employed underground or at the pithead; and grinders of knives, with exposure to silica dust arising from their sandstone wheels, are kept distinct from the cutlers who mount and polish the articles. In this last instance the composite cutlery group in 1910–12 showed a mortality 63 per cent. in excess of the average; now the grinders alone exhibit an excess mortality of no less than 230 per cent. Another change is that the standardised "Comparative Mortality Figures" are calculated for ages 20–65, instead of for ages 25–65 as heretofore. The standard used is that population —109,296 males—which yielded exactly 1000 deaths at the death-rates for different ages prevailing amongst all occupied and retired civilian males in 1921–23. These changes forbid the institution of comparisons between the C.M.F.'s of this report and those of previous occupational supplements. Continuity, of necessity, has been sacrificed; much more, however, has been gained than lost. Still we may hope that in future reports further changes will be avoided.

A special feature has been made in the Supplement of mortality by social grade, passing from Class I. to Class V. in descending order of refinement. At every age Class I. has the advantage; while the handicap of Class V. is greatest in middle life, 35–45, when the influence of adverse occupational conditions is at a maximum and appears to exert a selective influence in eliminating the unfit. Certain causes of death, such as phthisis, have long been known to be correlated with social grade, and the new figures confirm earlier inquiries, but they also exhibit statistical evidence of other associations hitherto unsuspected. Perhaps the most remarkable of these is concerned with cancer, deaths from which are tabulated by site attacked. The influence of coal-tar products and shale oils in originating skin cancer among chimney-sweeps, pitch-workers, briquette-makers, and mule-spinners is again manifested; but the fact is new that cancer affecting the lip, tongue, mouth, jaw, onwards to the stomach and ceasing at the pylorus, shows for each site mentioned, although less definitely as we proceed from lip to pylorus, an incidence increasing steadily from Class I. to Class V. Below the pylorus, cancer attacks the social classes without discrimination. The upper alimentary tract can be largely influenced by food and drink, but the particular power developing cancer here more in Class V. than in Class I. remains unrevealed. Cancer of the tongue and œsophagus are related to the incidence of chronic alcoholism; but evidence is lacking of any association between alcoholism and cancer of the stomach. Similarly no facts are found to support the suggestion that most gastric cancers arise from ulcers. The data relative to cancer of different sites are given in full and carefully discussed; a few may be quoted:—

—	Ratio of cancer of—		
	Tongue.	Œsophagus.	Stomach.
All occupied and retired males	1000	1000	1000
Social class—			
1. Upper and middle ..	480	763	597
2. Intermediate	733	907	820
3. Skilled workers.. ..	947	1041	997
4. Intermediate	1000	876	1058
5. Unskilled workers ..	1653	1299	1295

A somewhat curious fact is reported that nearly all the occupations noted as of excessive skin cancer mortality—ascribable in practically every instance to contact with fire or fuel stuff of some kind—record a cancer mortality for sites other than the skin also in excess of the average. Is this why Prometheus was punished for his gift of fire to humanity?

In contradistinction to the above and to phthisis stands diabetes, which affects chiefly the classes provided with the financial means of over-eating and under-exercising. But early and late diabetes are statistically different; at early ages hereditary defect in the pancreas may be the cause, while in later life overload breaks down normal machinery for utilising carbohydrate food. An unexpected coincidence is stressed—viz., that glass-blowers, skilled glasshouse workers, and glass-workers not in the glasshouse, all exhibit excessive mortality from diabetes, none of which occurs at ages over 65, and hence may be significant of some unrecognised occupational influence. Associated with diabetes stand appendicitis and cirrhosis of the liver, which latter varies in proportion to the financial means of obtaining so expensive a luxury as alcohol. Broadly speaking, these diseases cost money; the occupational groups which prove exceptions to the social grading are publicans, brewers, barmen, and cellarmen. Truly taxation, if not legislation, seems capable of imposing some degree of sobriety. Contrary to common belief, occupational risk is seldom expressed in circulatory mortality; but such mortality is an outstanding feature of the textile trades, both woollen and cotton, and it is associated with chronic nephritis. In fact, the conditions of work in textile mills are disclosed as promoting degenerative changes of the kidneys, heart, and blood-vessels. A hint at possible causation may lie in high mortality from circulatory disease among cotton weavers in dry sheds, but low mortality among those working in wet sheds. Myocardial disease is highest where silica risk is present, which in its turn is a cause of bronchitis; and this, again, is positively correlated with chronic nephritis; thus silica dust—an essentially occupational risk—is exhibited as exerting a degenerative influence on other tissues than the lungs. Bronchitis, considered alone, is more closely associated with social status than any other cause of death, with C.M.F.'s varying for the five classes from 12·7, to 27·2, to 46·5, to 59·4, and to 87·4 respectively. Causative influences of this disease are found in most forms of dust and also in exposure to artificial heat and moisture, as well as in the atmospheric conditions of the north as compared with those of the south.

The section of the report devoted to discussion of the 178 separate occupations, for which mortality

[1] Registrar-General's Decennial Supplement. 1921. Part II., Occupational Mortality, Fertility, and Infant Mortality. London: H.M. Stationery Office. 1927. 7s. 6d.

data are provided in excellent tabular form, is too lengthy for adequate summary. Agriculture, as always, presents a favourable picture. Coal-mining is extensively considered, both with regard to work done and to coal-field. The coal-miner appears to have benefited in the last ten years less than others, but his mortality is still favourable. Again Lancashire followed by South Wales is found with higher mortality than other coal-fields, but the difference is less than in 1910–12. Special attention is paid throughout to manifestations of recognised risks, such as dust among tin-miners and iron-miners, stone-masons and potters, cotton-strippers and others; and intense heat among gas-stokers, puddlers, and glass-workers. The new figures relating to fertility again show birth-rate increasing from the highest to the lowest in the social scale, a characteristic phenomenon of our own generation. Infant mortality is found highest where the birth-rate is highest, but it has fallen remarkably for all grades of the community in recent years, and now varies from only 38 for Class I. to 97 for Class V.

MEDICINE AND THE LAW.

Illegal Operation: Verdict of Manslaughter.

On Jan. 27th Charles Jackson Palmer, aged 59, described as a medical electrician, was found guilty at the Central Criminal Court of the manslaughter of Mrs. Goldsmith, a young woman of 21, who had gone to his consulting-room in Upper Brook-street for treatment on returning from her honeymoon. The prosecution alleged that her death was due to the unlawful injection of a fluid made up of soap and water, injected for the sole purpose of procuring abortion. The accused stated that the deceased came to him for electrical treatment for anæmia and nervous debility; he denied that he knew that Mrs. Goldsmith was pregnant; he said he was giving her electrical treatment when she suddenly sat up, clenched her hands, and collapsed. He told the police inspector that the treatment consisted of placing a pad down the spine and inducing an alternating current through the body in the region of the abdomen. Dr. H. B. Weir, who made the post-mortem examination, said the deceased was a perfectly healthy woman. On opening a portion of the body a soapy fluid began to escape; he saw something suggesting a slight abrasion. Sir Bernard Spilsbury said the fluid was a strong solution of soap and water; he drew the conclusion that the abrasion was produced by the nozzle of a syringe a few minutes before death. Both these witnesses were of opinion that the cause of death was shock due to an injection of fluid. The defence sought to discount these opinions and claimed that the evidence was consistent with the view that death was the result of electric shock; if there was soapy water in the body, the dead woman had perhaps placed it there herself. After the jury had found the accused guilty, the Lord Chief Justice described the conviction as based on evidence so clear as to be quite overwhelming; it "approached the certainty of mathematical demonstration." A police inspector reported that there was no previous conviction against the defendant; for some years he had conducted a genuine medical electrician's business among well-to-do people, but during the past 15 months the police had received information suggesting that he had been a party to illegal operations; his premises had on that account been frequently visited by inspectors. Lord Hewart asked questions during the case as to the by-laws made by the London County Council under its General Powers Act of 1920 for regulation of massage and special treatment establishments. These appear to contain valuable provisions, but it is for consideration whether some further and more vigilant measure is not possible to restrict the conduct of premises like those of Palmer as a place where criminal abortion can be practised with such appalling results.

On Jan. 31st Lord Hewart passed a sentence of seven years penal servitude and ordered Palmer to pay the costs of the prosecution. Persons, said the Lord Chief Justice, to whom clients resort for the purpose of illegal operations, undoubtedly subject those clients to very grave risks; "it is right that all of them, wherever they may be in this country, should understand that they incur grave risks themselves."

Pasteurised Milk.

In 1922 Parliament forbade the offer for sale and the advertisement or description of milk as "pasteurised milk," except under licence given by the Minister of Health or granted with his authority under a statutory order. Licences could be granted on terms and conditions prescribed by such order. The subsequent Milk (Special Designations) Order of 1923 dealt inter alia with pasteurised milk and enacted as one of the conditions that, on a sample taken after pasteurisation and before delivery to the customer, the milk should be found to contain (in samples taken after the year 1923) not more than 100,000 bacteria per cubic centimetre. Our contemporary, the *Medical Officer*, reports what is perhaps the first of the prosecutions for breach of this condition. A Wandsworth firm was prosecuted at the Kensington Petty Sessions for selling "pasteurised" milk not of the stipulated statutory standard, a sample (submitted to the Clinical Research Association) having shown bacteria to the number of 323,333 per cubic centimetre. It was stated for the prosecution that two other samples taken might equally have formed the subject of proceedings, and that the lids of the churns from which the samples were taken did not satisfactorily exclude rain and dust. The magistrates found the offences proved and fined the defendant firm (which had not appeared) £5 and £10 10*s.* costs. There was a second summons on which a further fine of £3 was imposed. This was for selling in Kensington without a Kensington licence in breach of a condition specified in the licence. The firm had a Wandsworth licence for selling pasteurised milk, but this did not authorise sale outside the Wandsworth area except by way of wholesale distribution.

Death from Borax Poisoning.

Recently at an inquest at Luton on the death of an infant, 18 days old, Dr. J. Birch stated that the post-mortem examination showed death to be due to borax poisoning. The symptoms, he said, could have arisen from the use of honey and borax or glycerine and borax, a jar of which was produced in court. Dr. Birch criticised the use of this substance as dangerous especially when dispensed as a remedy for thrush—usually administered by smearing it on the gums of the infant. He stated that a quarter of the amount given to this baby had been known to be fatal to adults. He had known the danger of this preparation all his professional life and had always forbidden its use. He considered it ought not to be given in the British Pharmacopœia in its present strength.

Injury Caused by Hair-dye.

Actions are not infrequently brought against hairdressers for damages for dermatitis caused by the application of hair-dye. They are based upon allegations that the hairdresser has been negligent, or alternatively upon breach of contract and warranty. Such an action was lately brought against an Oxford-street hairdresser who appears to have employed a dye containing 30 per cent. of para-phenylene diamine. His practice was to exhibit a printed notice disclaiming liability for the ill-effects of his hair-dyes; the notice stated that about two persons in a thousand suffer ill-effects; "as it is impossible to know these few without a test, we are willing to give this free trial on the customer's own responsibility." The plaintiff, who wanted her hair dyed blue-black like that of a friend of hers who had recently been so treated, was given a preliminary test. Dye was applied to a patch of skin behind the ear

the size of a sixpence. The result, according to the plaintiff, was dermatitis of the scalp, inflammation of the left ear and of the neck and chest, swelling of the eyelid, insomnia, shock, and nervousness. Mr. Justice Horridge left it to the jury to say whether, in all the circumstances of the case, the plaintiff had received adequate warning of the risk she ran in having the test applied; if she had had such a warning, they should find a verdict for the defendant. This they proceeded to do forthwith, without leaving the box, and judgment was entered for the hairdresser with costs.

Health or Justice?

The learned Recorder of Chichester, at a lecture given to the Royal Institute of Public Health which was reported in THE LANCET last week, gave his opinion that no change should be made in the legal rule which requires a doctor to disclose confidential details concerning his patients. Lord Justice Atkin, however, expressed a different view at the close of the lecture; he frankly stated that in some cases—notably those connected with venereal disease—the claims of public health far outweighed those of justice, and he favoured a change in the law. The Lord Justice provided a fresh argument in this controversy by referring to the secrecy with which certain evidence of official matters is treated. The solicitor's privilege is defended because it is in the interests of the administration of justice; the doctor's privilege is refused because it conflicts with the administration of justice; and yet the courts allow facts to be withheld—if, for instance, they concern the technical details of the equipment of our fighting services—without any reference to the administration of justice whatsoever. In the past few weeks there has been a prosecution under the Official Secrets Act of two spies, who have received severe sentences; part of the evidence was given behind locked doors. There has also been an application in the police-court concerning the ownership of certain naval documents, and again the proceedings were partly carried on in camera. May it not be just as much to the interest of the State to withhold facts dealing with a man's health as to withhold facts dealing with the construction of a submarine?

SOUTH AFRICA.

(FROM A CORRESPONDENT.)

Dengue in Durban.

DURING the first half of 1927 Durban suffered from a remarkable epidemic of dengue fever, the number of cases in the town and its vicinity being estimated at about 50,000. At the request of the town council Dr. A. J. Orenstein, of Johannesburg, has submitted a report on the measures that should be taken to eliminate mosquito-breeding and thus prevent the disease. In this report he says that it is now established with reasonable certitude that dengue is transmitted by *Aedes egypti*, more commonly known as *Stegomyia fasciata*. This mosquito invariably breeds in collections of water near human habitations, its flight is very limited, and it may safely be said that under ordinary circumstances it does not travel more than 100 yards. The larvæ are most commonly found in artificial receptacles, both indoors and outdoors, and will develop in very small collections of water—e.g., in tin cans or broken bottles, in ewers of water in unused guest rooms, in water-tanks, water-barrels, and holes in trees. The larvæ can remain submerged for several hours, and consequently may be difficult to detect in fairly large collections of water, such as rain-water tanks. The eggs are very resistant to unfavourable conditions and may remain dry for months and yet, when placed in water, hatch out healthy mosquitoes. The adult mosquito will, under favourable circumstances, survive for several weeks.

It used to be considered, says Dr. Orenstein, that *Culex fatigans* transmitted dengue, but experimental work seems to have disposed of this theory. Stegomyia is almost certainly the sole danger, and its habits of breeding are consequently of great importance in considering the preventive measures. As it appears that a very large portion of the European population of Durban and its vicinity were attacked by dengue during the first half of 1927 there is good reason to believe that an outbreak on a large scale is improbable in the near future among the European population, inasmuch as it has been shown by Siler, Hall, and Hitchens that the disease conferred immunity in 58 per cent. of cases, and modified towards mildness subsequent attacks in the remainder. An outbreak might, however, occur among the native and coloured population, who apparently were not affected as much as the European population by the last epidemic, and an outbreak of minor magnitude might occur among the European population not attacked in the last epidemic.

Dr. Orenstein does not think that dengue should be made a notifiable disease, but he suggests that the medical officer of health should circularise the medical practitioners of Durban to ensure (*a*) that all cases should, for the first three to five days of their illness, be carefully protected by mosquito nets; and (*b*) that the houses of such cases be searched for adult mosquitoes and for mosquito-breeding, with a view to its elimination. He recommends that the municipality should offer to provide on loan mosquito nets for patients and for the personnel of the mosquito search, for "Protection of the sporadic cases against mosquito bites . . . is the best and most promising measure of preventing an epidemic of dengue."

It is suggested that the following amendments be made in the public health regulations:—

(*a*) No tanks, wells, barrels or receptacles of any kind for the collection or storage of water shall be permitted except in those districts which are without a public water-supply. When such tanks, wells, barrels, or other receptacles for the collection or storage of water are permitted, they shall be made mosquito-proof to the satisfaction of the medical officer of health. Wells, where permitted, must be fitted with an approved pump.

(*b*) The throwing or keeping of tins, bottles, broken crockery, or any other object that may hold water and thereby become a breeding-place for mosquitoes, in any street, yard, alleyway, or any premises or property, whether occupied or unoccupied, constitutes an offence.

(*c*) All premises, whether occupied or unoccupied, must be kept in such a condition as to prevent mosquito-breeding, and the medical officer of health may give notice to the owner or occupier of such premises requiring him to correct, within a definite time-limit, the conditions as specified in the notice. Failure to carry out the instructions contained in the notice shall constitute an offence.

(*d*) Roof gutters shall be so planned and constructed as to be self-draining and remain dry between rainfalls. Upon due notice from the medical officer of health, which shall specify a time-limit, the owner or occupier of the premises shall remove or repair roof gutters which hold water and might give rise to mosquito-breeding.

(*e*) If any owner or occupier refuses to carry out the measures specified in any notice under these regulations, or fails to do so within the time-limit imposed, the local authority may, by persons duly authorised thereto, carry out such measures. The costs incurred in so doing shall be recoverable by the local authority from the person upon whom the notice was served.

Dr. Orenstein recommends that special inspectors be detailed for work against stegomyia; it would be their duty systematically to inspect premises for breeding-places, especially during the warm season. The large swampy areas in the vicinity of Durban present difficult problems of mosquito control. Without more data Dr. Orenstein is not prepared to suggest definite methods of permanent control, but proposes an experiment on a small scale in two areas where cattle could be kept out by fencing, sunflowers could be planted, and collecting pools could be arranged at the lowest point, with clear banks, for any excessive water. This might, he thinks, lower the surface water sufficiently to diminish mosquito-breeding very considerably. At present larvæ are controlled in swamps and ditches by means of crude oil, but in several instances he found larvæ where oil had been recently applied, this being due either to the oil

being blown away by the wind or to the film being broken by vegetation or dry twigs. A great many mosquito-breeding areas could, he thinks, be more economically treated by the application of some cheap emulsifying larvicide.

Retirement of Port Natal Health Officer.

Dr. H. E. Fernandez has retired from the post of port health officer at Durban, Natal, after a service of 32 years. He has seen Durban develop from the days when there was only a depth of 17 feet of water on the bar at the top of high tide to what it is to-day—when vessels of the deepest draught come inside to the wharf.

Bilharzia in the Transvaal.

Remarkable success has been achieved by the pioneer camp established at Rustenburg School for children suffering from bilharzia. Sixty patients drawn from 25 different schools in the district—which is particularly pestered by the disease—have been undergoing treatment at the camp, and are reported to have been completely cured in less than a month after their arrival. The Director of Sanitation for the Rand Mines submits that it is imperative for the authorities of the Provincial Council and the Union Government to coöperate in establishing similar camps throughout the Transvaal.

The Carnegie Corporation of New York has drawn up a five-year programme of grants in aid of scientific research in the Union of South Africa. The sum of £1500 is to be used in investigating the Bantu mentality, whilst £4000 will be set apart for a study of the "poor white" problem. The total amount to be expended will be £100,000, and £18,000 is to be used for encouraging the exchange of visits between South African and American scientific and educational authorities. Some of the funds will be devoted to social and medical work in East Africa.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Diabetes in Germany.

IN the course of a recent address to the Society for Insurance Medicine Dr. Ullman drew attention to the increase in diabetes throughout the world, an increase most obvious, he said, in the United States. The late war caused a general diminution in the disease; thus in Berlin the mortality per 1000 rose from 1·0 in 1900 to 2·3 in 1913, but in 1919 had fallen again to 1·0. Since that time there has been another steady rise, bringing the death-rate to 1·8 per 1000. The age-period at which diabetes most commonly shows itself is from 40 to 45, and it attacks especially those classes whose work involves much mental strain. In America there is a saying that if prices on the stock exchange fall the amount of diabetes rises. The mortality is higher in towns than in the country, and Dr. Ullman considers that no race is especially liable to be affected, the apparent racial differences being actually dependent on varying habits of life. Up to 35 years of age both sexes are equally prone to the disease, but afterwards the mortality among males increases owing to the exertion and excitement of their work. Now that women are working more than formerly the difference between the rates for the two sexes is diminishing. It has not yet been ascertained whether diabetes is growing more severe in type.

Infectious Diseases in Berlin.

The last two years have seen a considerable increase of diphtheria in Germany, and especially in Berlin, where the number of cases is three times as great as in 1925. But, as Prof. Seligmann, head of the Berlin Municipal Laboratory, points out, the record of the last five years is on the whole a good one; diphtheria, indeed, reached its minimal incidence in 1924, and it may be hoped that the increase is only transient. 500 cases were notified in Berlin during September and October, 1927, as compared with 200 in the previous year, most of them being in the east and north-east parts of the city, which are thickly populated by poor people. School-closure is sometimes adopted by the municipal educational authorities, but they do not approve of this measure as a rule as it does not seem to be very effective and may lead to infection being spread more widely. The clinical course of the disease has grown worse, and the case-mortality has been higher in Germany than elsewhere. The prevalent organism seems to be of a specially malignant type; possibly, too, the resistance of the population has been lowered by the privations of the war and of the period which came after it. To combat its consequences antitoxin is given gratis to indigent families, and pamphlets warning parents against negligence are distributed in the schools.

Last year's figures show that the incidence of scarlet fever and measles in Berlin was much as usual. Notifications of infantile paralysis, of which an epidemic occurred at Leipzig and elsewhere in Germany, are seen to have increased but little. Dysentery and typhoid fever have been kept under control by regulation of the water and milk-supply, but meat-poisoning and paratyphoid have been on the increase. If the people of Berlin would refrain from eating raw meat in the form of "beefsteak à la tartare," the amount of poisoning would diminish.

The Soft Palate in Diagnosis.

In a paper read before the Berlin Medical Society Dr. Neuda pointed out that examination of the soft palate will often give useful information about general as well as local diseases. The colour of the palate may be altered, showing either hyperæmia or anæmia; it may look œdematous, and the junction with the hard palate may disappear or else become more obvious. Increase of fat in the soft palate suggests metabolic disorder, and also occurs in cancer of the stomach. In duodenal ulcer the soft palate is hyperæmic; large spots of hyperæmia indicate recent syphilis, whilst small spots show congenital syphilis. The palate is yellow, of course, in diseases of the gall-bladder.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Edinburgh Health Week.

THE Edinburgh Health Week has included a full programme of medical and hygienic conferences and demonstrations. The Society of Medical Officers of Health, the school medical officers, and those lay and medical men and women associated with child welfare and maternity service, have all found a convenient platform and good audiences. But the outstanding feature of the week has been the health and hygiene exhibition in the Waverley Market. Edinburgh is very fortunate in having so fine an exhibition hall in a position so central. The daily average of visitors even in the first few days approached 10,000, and the exhibition deserves their patronage. It includes most of the leading departments of civic activity affecting health and the prevention of disease. The tuberculosis sections under Dr. John Guy, the children's sections under Dr. Leonard Findlay, and many of the others attracted continuous crowds. The cookery exhibits and demonstrations under the Atholl Crescent School of Cookery were among the best of the relatively "lay" sections. Dr. William Robertson, the medical officer of health, and his very active collaborators are to be complimented on the success of a first-class exhibition. It is the largest demonstration of civic hygiene that the Edinburgh Corporation has, in its official capacity, organised within the last 30 years.

Industrial Health Education Society.

This society took advantage of the Health Week to organise a meeting in the Usher Hall. In numbers the meeting was not large, but all those present were individually interested. The Secretary of State for Scotland made a telling appeal for support and encouragement. Men of all parties, creeds, and classes

were joined together for one common purpose, and in that appeal to the general citizens of the country they would be repaid a thousand-fold if all would take action personally in their own spheres. Sir Thomas Oliver, in his usual lucid and effective way, gave a few good illustrations of how preventive medicine had been applied to occupations and how "phossy jaw," lead poisoning, and other conditions had been reduced the moment detailed scientific attention was given to the manufacturing and working processes. Mr. William Graham, M.P., emphasised the value of the work being done by the Medical Research Council and the Industrial Fatigue Research Board. It is gratifying to learn that the lectures by medical men for the society now run into hundreds a year and the demand is steadily increasing. Scotland has the credit of originating this society.

The Cream Regulations.

The new Cream Regulations seem to have caused much more concern to Scottish than to English producers. The complaints of the trade are persistent, and it is disappointing to note that producers and those that express their case in print seem to believe that the English Ministry of Health has jurisdiction in Scotland. They seem unable to learn or to believe that on the day that the Ministry issued their Preservative Regulations for England and Wales the Scottish Board of Health issued a parallel and independent set for Scotland. Scotsmen are never tired of boasting about their independence, but they seem to prefer government from London. There is, however, one really important point: in Scotland there never has been, as in England, any regulation permitting boric acid (maximum 0·4 per cent.) in "double" cream. For all these years, however, the Scottish producers have assumed that they were legally entitled to add boric acid. Now that they are expressly told that what has been the law all along under the Food and Drugs Acts is to be definitely enforced under the new Preservative Regulations, both English and Scottish, they cry out more lustily instead of setting themselves to devise better methods of production, manufacture, storage, and transport. The milk trade is always resentful of interference. Every reform of its methods has to be initiated by smashing blows from without. Probably, as the Scottish cream market is about 50 per cent. English, Scotland may for a time suffer more. But there are some large producers who welcome the new regulations. A point to remember is that these are not aimed at the small or large quantities of preservatives, but at the evil conditions of production that make any preservative necessary. Meanwhile the prosecutions for adding preservatives to "mince meat" are proceeding and there is little doubt that less amounts of unwholesome scraps are finding their way into the mince-heaps.

Public Health Services.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 21ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 405; scarlet fever, 2007; diphtheria, 1488; enteric fever, 44; pneumonia, 1550; puerperal fever, 53; puerperal pyrexia, 118; cerebro-spinal fever, 5; acute poliomyelitis, 6; encephalitis lethargica, 28; dysentery, 6; ophthalmia neonatorum, 101. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were notified from the following 20 counties:—London 2 (Lambeth, St. Pancras), Chester 1, Derby 16, Durham 85, Hertford 11 (Barnet 10, Ware 1), Lancaster 35, Leicester 7, Lincoln, Parts of Lindsey 3, Middlesex 2 (Edmonton 1, Heston and Isleworth 1), Northampton 20, Nottingham 16, Stafford 3, Surrey 1 (Beddington and Wallington), Warwick 28, Worcester 1, Yorks North Riding 14, West Riding 57, Brecknock 12, Glamorgan 27, Monmouth 64.

The number of patients at the Infectious Hospitals of the Metropolitan Asylums Board on Jan. 24th–25th was as follows: small-pox, 3; scarlet fever, 1798; diphtheria, 2526; enteric fever, 21; measles, 1302; whooping-cough, 140; puerperal fever, 13 (plus 10 babies); encephalitis lethargica, 70; poliomyelitis, 2; "other diseases," 43. At St. Margaret's Hospital there were 9 cases of marasmus, and 18 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London there was 1 death from small-pox, 4 (1) from enteric fever, 94 (39) from measles, 4 (1) from scarlet fever, 21 (5) from whooping-cough, 51 (13) from diphtheria, 51 (5) from diarrhœa and enteritis under two years, and 126 (19) from influenza. The figures in parentheses are those for London itself. The death from small-pox was reported from Bradford C.B. The fatal cases of enteric fever outside London were reported from Brentford and Chiswick, Leeds and Sheffield one each. Of the 55 fatal cases of measles outside London, 16 were reported from Bristol, 7 from Manchester, 1 from Salford, 6 from Warrington, 4 from Sheffield, 3 each from Tottenham and Derby, while the figures from Glasgow and Dublin for the same week were 35 and 14 respectively. The number of stillbirths registered during the week was 291 in the great towns, including 41 in London.

We learn from Dr. J. J. Buchan that up to Jan. 30th there had been three deaths from small-pox of inmates of the North Bierley Institution at Clayton, just outside the Bradford boundary, after their transference to the small-pox hospital. They were debilitated subjects, aged 71, 73, and 75 years respectively, all of whom had been vaccinated in infancy.

BIRMINGHAM TUBERCULOSIS DEPARTMENT.

AN article appeared in THE LANCET of Nov. 12th, 1927, headed "Tuberculosis in Birmingham," which contains several statements regarded by the medical officers of the Tuberculosis Department as giving an unfair impression of their work. It appears that certain of these statements have been misinterpreted. The fact has been missed that the article was a survey of the position of antituberculosis work in general, and any criticism of the Birmingham methods formed a part of such general criticism.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee 43 cases were considered, and £630 voted to 32 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 56, of L.R.C.P. who died in 1901. Up to 1914 relied on boarders for her maintenance, but owing to ill-health has had to give up this work, and her income is now reduced to about £21 per annum from investments. Lives with an aged father, aged 82, who requires constant attention. Has to contribute to her own support. Voted £5 pending further inquiries.

Widow, aged 55, of M.R.C.S. who died in 1905. Apart from an annuity of £30 per annum from an aunt, is dependent on her earnings by needlework. Rent 17*s.* 6*d.* a week, but sublets two rooms for 10*s.* a week. Voted £26 in quarterly instalments.

Widow, aged 52, whose husband was in the Indian Medical Service and died in 1921. Only income pension of £90 per annum from War Office. Rent at present £52 per annum. One son, married, with one child, but out of employment. Asked for immediate help and was voted £10 pending further inquiries.

L.R.F.P. & S. 1890, lady, aged 77, who mostly practised abroad. Since 1921 has not been able to do any work and has now come to the end of her resources. At present living with a brother, but writes, "If possible I do not wish to be a burden on him, I should be grateful if the Fund would grant me some assistance, though I am sure you will quite understand I do not like to ask for help." Voted £36 in quarterly instalments.

Daughter, aged 64, of L.S.A. 1826 who died in 1873. Has earned her living for the past 35 years as governess-companion, and on having to give up this work was persuaded by friends to take a small house and take paying guests, who promised her £130 per annum; these allowances have been gradually reduced and the amount now received is only £26 per annum. On account of failing health the last guest was requested to leave, and a friend found this lady penniless and several small bills owing. The friend raised a small fund to meet immediate needs and writes to the Fund to say that this was being disbursed at the rate of 10*s.* a week, but was almost exhausted. Voted £30 in quarterly instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, W. 1.

Correspondence.

"Audi alteram partem."

TREATMENT OF THE MALARIAS.

To the Editor of THE LANCET.

SIR,—The effective treatment of malaria in its various manifestations is being keenly discussed in the columns of the medical press. I have read with interest the leading article in your issue of Jan. 14th, and Dr. Manson-Bahr's comment upon it. I have myself been using plasmochin for some time and am by no means convinced that the results obtained by its use are any better than those obtained by quinine with iron and arsenic. It is admitted that plasmochin alone does not kill the schizonts of malignant tertian malaria, though it apparently does the gametocytes, the crescents. But what is the use of destroying the crescents—apart from preventing anopheline infection—if the rings which produce them are unhurt? The schizonts will simply produce more gametocytes. The proper method is to destroy the former and then no more of the latter will be formed, and those already existing in the blood will soon disappear It is a case of the goose and the golden eggs over again. The fact that it is necessary to combine the plasmochin with quinine points its own moral.

There is no doubt also that plasmochin is a more dangerous drug than quinine, its therapeutic and toxic doses being very near together. Dr. Manson-Bahr says that toxicity seems to be entirely eliminated by the mechanical combination of plasmochin with small quantities of quinine sulphate, in the form now known as "plasmochin compound." Why this should be is not clear, and that it is not so in all cases is shown by the fact that I have recently had three well-marked cases of cyanosis and one of sickness after the use of plasmochin compound. I do not say that this matters very much, but on the other hand, in certain individuals it might be serious, and it is a danger that one cannot ignore.

It is quite possible, of course, that in cases which seem to resist quinine or even in ordinary cases, a combination of these two drugs will act better than either given alone, but time only and careful observations will show this. The same may be said of relapses. If it can be demonstrated that these never appear after plasmochin treatment, or rather after plasmochin compound treatment, then the combination will be proved to be better than the ordinary quinine and arsenic treatment, and should be generally adopted. I personally have had one doubtful case of relapse, but as the blood was not tested I cannot say this for certain. There is also the question of expense, a very important one of course.

I have also been extremely interested in the recently reported outbreak of malaria in Barbados, and especially so as I was the first to point out, in 1901, that the reason the island was free from malaria was because there were no anopheles mosquitoes present there. I dealt with the question in a paper entitled Malarial and Filarial Diseases in Barbados.[1] I thought it possible that there might be something in the water of the island prejudicial to the development of the anopheles, so I took a supply of this over to St. Vincent, an adjacent island, where *Anopheles albimanus* was abundant. I found that the larvæ of this species of mosquito lived and developed in this quite well and ultimately pupated and became adult insects. In a note on the Absence of Anopheles in Barbados, W.I.,[2] I said: "This indicates that it will be a very serious thing for Barbadoes if by any chance anopheles mosquitoes are ever introduced to the Worthing swamp." This has apparently now happened, 25 odd years since I made that statement.

[1] Brit. Med. Jour., 1901, ii., 687.
[2] Ibid., 1902, i., 200.

Dr. Andrew Balfour,[3] has indicated how the invasion has probably taken place. Small sailing vessels come into the harbour close to the shore, and anopheles brought over by them from some of the other islands must have escaped, bred, and gradually extended their range to what would now appear to be a fairly extensive one. People returning to the island with malarial parasites in their blood have infected the mosquitoes, and so the disease has broken out indigenously. If the excellent suggestion, of making ideal breeding places, artificially constructed, in close proximity to the wharves, made by Dr. Balfour when he visited Barbados some years ago had been carried out, the infection of the island might well have been saved. It has always seemed strange to me that anopheles have not been introduced before in this way, and it is quite possible they have been, but that they have never been able to establish themselves permanently. Their introduction and permanent settlement this time effectively kills the stupid myth that Barbados has enjoyed immunity from them because of the presence of the small fish called "millions" in the different pools of water scattered through the island. Even in my time I could always get two or three species of culicine larvæ in the pools inhabited by these fish, and now the anopheles are holding their own as well.

There is no use crying over spilt milk, however. What is required now is to stamp out the anopheles, and this, though it will be an expensive matter, is a fairly easy one. The collections of water are small and so can be dealt with easily by drainage, oil, &c. It is not clear yet if the larger collections of water, the swamps at Worthing, are infected or not, but, if so, there will be a greater difficulty in dealing with them. Because of the absence of rivers and big swamps and stagnant water generally, there can be no place easier than Barbados in which to conduct an anti-anopheline campaign. Perhaps it would be as well, however, to send out an expert or experts from home to conduct this.

I am, Sir, yours faithfully,

G. CARMICHAEL LOW.

Brook-street, W., Jan. 26th, 1928.

THREE CONCEPTIONS OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Of the three conceptions of tuberculosis, suggested by Dr. E. Ward in his paper read before the Plymouth Medical Society (THE LANCET, Jan. 21st, p. 125), the Edwardian is surely the wisest and nearest the truth: "A widespread disease . . . *always dangerous . . . when causing symptoms*" (italics mine). It is dangerous to neglect the symptoms in the same sense that it is dangerous to run past a danger signal on the line. Dr. Ward suggests the term "minor tuberculosis" for the disease in those patients who have become infected with tubercle bacilli, but who have sufficient resistance to recover, with little or no treatment. That such cases do exist there can be no doubt, but the point I would like to emphasise is that when signs or symptoms, or both, have made their appearance, the case can no longer, with safety, be regarded as a "minor" one. In the absence of the gift of prophecy, it is not possible to decide whether the resistance will, or will not, continue to hold its own unaided.

Dr. Ward quotes four cases in whom the precautions taken were as follow: 1. "Commonsense precautions." 2. "Became much more careful." 3. "Continued work under observation and an improved régime." 4. "A short holiday and a few adjustments." All these four cases showed definite signs or symptoms. In one case tubercle bacilli were present in the sputum, and in another hæmoptysis had occurred. The result of an expectant policy in these four cases was happily successful; in fact, Dr.

[3] Brit. Med. Jour., Jan. 21st, p. 114.

Ward may be said to have got away with it; but I think every sanatorium worker will agree with me that the risks run were unjustifiable even by the fortunate results.

The other side of the picture is all too familiar. The cases, hopelessly advanced, obviously ill, with small chances of recovery, which are frequently sent, too late, for admission to sanatoria, usually give just such a history as did the four cases presented by Dr. Ward. Unfortunately, that history refers to a period of three, four, or more years ago. The intervening time has seen the gradual and insidious undermining of resistance which should, long ago, have been reinforced by adequate treatment. Interrogation elicits the fact that the onset of the significant signs and symptoms mentioned by Dr. Ward was met by the treatment prescribed by him. The urgent necessity of sanatorium treatment with prescribed rest and graduated exercises, and education in avoidance of infection, was never suggested, but the patient was fatally reassured and encouraged by such advice as "A holiday in the country will soon put you right," "Plenty of fresh air and exercise is all you need," or "Take a sea voyage and forget all about it." So time was lost, and the cases which may then have been minor became very much major.

It is significant that the four cases mentioned by Dr. Ward belong to the professional class. This is the class in which successful results may well be expected. Intelligent, eager to get well and resume work, keen to coöperate in the comprehended restrictions of the régime, its members are usually the most responsive to sanatorium treatment. It is also, unfortunately, the class for which there are least facilities for obtaining wise and informed direction, and which, in consequence, is often allowed to waste the valuable years by a too complacent policy of "Wait and see."

I am, Sir, yours faithfully,

H. O. BLANFORD.

Heatherside, Camberley, Surrey, Jan. 26th, 1928.

DAMAGES TO BONES AND REPUTATIONS.

To the Editor of THE LANCET.

SIR,—I have read with admiration Prof. Hey Groves's dissertation in your issue of Jan. 28th. The subject on which he writes is a bugbear to the country practitioner living, as he may do, miles from an X ray plant. The difficulty of transit and also of expense (which does not apply to the rich or the fairly well-to-do in the country) is a matter of concern to the farmer or the country labourer, who, we all know, are in rather a parlous state at the present time. The absence of electricity or even gas in many of our country villages render such cases (together with a possible litigation) a veritable nightmare to the doctor attending.

In the country many of the victims of such accidents cannot even afford to pay the medical man in attendance an adequate fee. Much less can they afford the cost of a car to take them to the nearest hospital for an X ray photograph; and again, after a few days, a repetition to see that the parts are keeping their proper alignment. The country man is an obstinate individual. He prefers to be ill at home to lying in a hospital bed, however much he may be told the advisability of it. And yet, in these days, he expects the same treatment and attention. If he does not get it, he maligns his medical attendant, often through the medium of his relatives and friends, from lady bountiful to the village drunkard.

I cannot say to my knowledge that I have myself suffered from such folk, but I know plenty who have. Prof. Hey Groves says, "Efficient portable X ray plant ought to be available whenever needed," and he suggests an ambulance service equipped. This is excellent and ideal. But how is this service to materialise?—I am, Sir, yours faithfully,

R. T. RICHMOND.

Seascale, Cumberland, Jan. 28th, 1928.

SPECIFICITY OF ANTI-CANCER SERA.

To the Editor of THE LANCET.

SIR,—I gather from recent conversations with other scientific workers that it may save their time as well as mine, and avoid future correspondence, if you permit me to epitomise here my present views as to the specificity of anti-cancer sera. With the assistance of Miss A. C. Kohn-Speyer I have recently repeated all the crucial experiments and have come to the following conclusions, which confirm and amplify those previously arrived at.

I find that the serum of a rabbit which has been repeatedly inoculated with mouse cancer fragments may contain three factors which are toxic to cancer cells cultured in vitro.

1. A factor naturally present in the sera of many adult rabbits, which is toxic to any mouse cell. I was rather surprised to find that this factor is very labile and can be destroyed by heating the serum to 56° C. for 30 minutes. Addition of fresh rat or mouse serum to the heated rabbit serum does not reactivate this toxic element.

2. *Anti-mouse-group Bodies.*—These are not specifically anti-malignant and very stable; they survive heating to 56° C. for 40 to 60 hours.[1]

3. *Anti-malignant-cell Bodies.*—These are specific in the sense that they kill malignant cells and not normal tissues, but they are toxic to many varieties of malignant cells and not only to the mouse cancer cells which were used as an antigen. Such antibodies resist heating at 56° C. for four to seven hours.[1]

The first of these three elements is easily demonstrated by applying pure serum from an adult normal untreated rabbit to mixed cultures of mouse cancer and normal tissues. The second by applying the serum of an immunised rabbit after heating the antiserum for eight hours to destroy the first and third groups of toxic factors, fresh rat serum being added as complement. The presence of the third factor is less certainly proved since it is more labile than the second and cannot therefore be isolated by heating. Antisera made in rabbits are, in my experience, less specific than those made in sheep or in rats. If, however, great care be taken that the antigen injected into the rabbit is pure (i.e., *to wash the mouse cancer fragments free from blood and to avoid excess of stroma with sedulous care*), I have found that some specificity can be observed—viz., that migrating cancer cells are killed more rapidly than the normal tissue cells. If the antigen is carelessly prepared no specificity may be demonstrable. Diluting the anti-serum does not help much since the anti-species element is still dominant and tends to mask the anti-malignant factor.

The existence of antibodies which have a specific affinity for malignant cells is, however, demonstrable in other and surer ways. The clearest proof is supplied by using a particular anti-cancer serum on tissue cultures of cancer cells from a species other than that from which the antigen was taken. Thus if human breast cancer is injected into a sheep and the sheep's serum is thereafter applied to mixed cultures of mouse cancer, mouse heart, and mouse kidney, or of rat sarcoma, rat heart, and rat kidney, every tumour cell is killed in a few minutes, the normal cells survive. Here no anti-mouse or rat element is present, unless the sheep's blood originally contained it, and even if so, this naturally existing toxic element can be eliminated by heating the antiserum for an hour and recomplementing with rat complement. Conversely if anti-mouse cancer serum from a rabbit is applied to tissue cultures of human breast cancer cells it causes the death of the human cancer cells. Again, if anti-Jensen's-rat-sarcoma serum from a sheep is fully absorbed with rat tissues or even with rat blood corpuscles and the absorbed serum is then applied to a mixed culture of mouse cancer and mouse normal tissues the cancer cells are killed rapidly; the normal tissues are much less, if at all, damaged.

[1] Kohn-Speyer THE LANCET, 1927, ii., 377.

A further proof is that if the serum of a rat hyperimmunised against Jensen's rat sarcoma is applied to cultures of mouse cancer many of the cancer cells are damaged. This can only be as the result of anti-malignant elements in the hyperimmunised rat serum, for an untreated sarcomatous rats' serum never injures cultures of mouse cancer. If a rat instead of a rabbit be selected as the animal in which to make anti-mouse cancer serum a more evident affinity for cancer cells can be demonstrated; presumably the rat being nearly related to the mouse has less tendency to form anti-mouse bodies than the rabbit has.

In vitro results should only be regarded as giving useful indications, and should when possible be confirmed by observations made in the living body. In this instance adequate confirmation of this sort is available, since many rat sarcomata and in one instance a spontaneous rat mammary carcinoma have been got rid of by inoculating anti-human-breast-cancer serum into them—i.e., a serum which contains anti-malignant but no anti-rat elements.

I am, Sir, yours faithfully,

THOMAS LUMSDEN.

The Lister Institute of Preventive Medicine,
London, S.W., Jan. 24th, 1928.

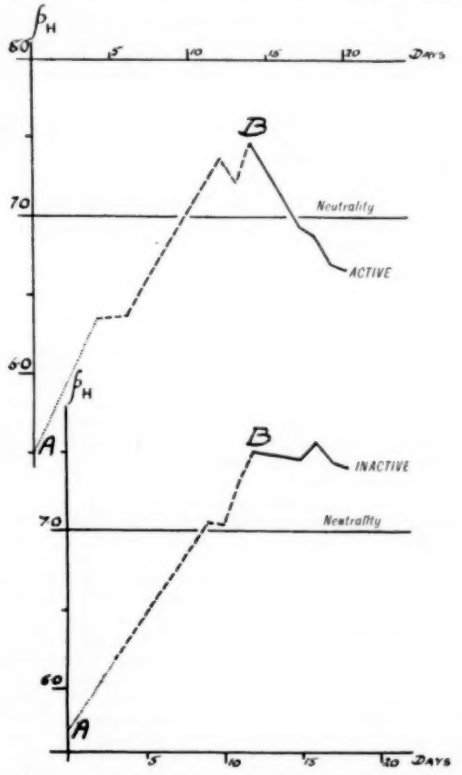
THE VITAMIN D VALUE OF COD-LIVER OIL.

To the Editor of THE LANCET.

SIR,—The difficulty in assaying the vitamin D value of cod-liver oil, or of other preparations claiming that vitamin, by any of the methods described by Miss Leigh Clare and Miss Soames in your issue of Jan. 21st (p. 150) is well illustrated by their statement, that after the use of 200 rats only the roughest classification of seven samples of oil could be obtained.

We were very forcibly compelled to recognise this difficulty when we began some four years ago to prepare from cod-liver oil a vitamin D concentrate. It was necessary, if this product was to give clinical satisfaction, to ensure its adequate content of vitamin D. This could only be achieved by assaying for vitamin D the oil used as raw material, by effectively controlling the manufacturing process, and by standardising the finished product. For such purposes a biological method of some accuracy and considerable rapidity was essential, in the absence of even the beginnings of a chemical test. After a survey of the various techniques then in use or proposed, it seemed clear that the only one likely to prove of service was that suggested by Zucker and Matzner.[1] This depends upon the change from alkalinity to acidity (pH over 7·0 to pH below 7·0) in the fæces of rats which have been placed upon certain diets high in calcium and low in phosphorus, and free from vitamin D. I personally had the advantage of instruction in the details of the test from Dr. Zucker himself in the laboratories of the College of Physicians and Surgeons, Columbia University, New York, and, after some slight modifications made in the light of experience, we adopted this method of assay. The procedure is fully described in a recent paper by myself and another.[2] After more than 2000 determinations of antirachitic potency carried out upon a wide variety of substances, and frequently checked both against chemical methods (bone analysis) and against histological methods (the so-called "line" test), we have been unable to avoid the conclusion that the rapidity and accuracy of this test gives it advantages over every other procedure. We may add that, since the publication of the paper referred to above, we have extended our observations upon the specificity of the test, and have found it quite negative in the cases of several inactive vegetable and animal oils, and positive in the cases of irradiated ergosterol, irradiated plant sterols, and other sources of vitamin D.

In order that determinations may be carried out in the shortest possible time a plentiful supply of young rats is essential. These are placed upon the experimental diet as a routine procedure, so that animals which have reached the desired fæcal alkalinity are always immediately available for use. In this way an estimation can be carried out with accuracy in five to seven days, using two, or at most four, animals. A considerable degree of skill in the technique is, however, essential, as is accurate (and incidentally expensive) apparatus for the electrometric determination of the fæcal pH. The progress of two typical assays from our routine test sheets is readily followed from the accompanying graph.



At A the animals have been placed on the experimental diet, and in the period A–B the pH of the fæces is steadily rising. At B the dose of the substance to be tested is given, and in the ensuing six days a rapid change in pH from an alkaline to an acid value is observed with the active, but not with the inactive, material. The test will only give the accuracy of a pharmacological assay if the dosage be adjusted so that the pH falls to below 6·90, but not below 6·60. If the fall is not to a point between these limits, the test must be repeated with the dosage adjusted to give the required fall; we have found the drop in pH to be reasonably closely proportionate to the vitamin D content over this range only. This point is being made the subject of a further communication from these laboratories to the Biochemical Society. The test, like the two colour tests for vitamin A, may be open to the objection of a want of specificity, but this does not seriously affect its usefulness. There is never any difficulty in discriminating between the "lactose effect" or "free acid effect" produced, as shown by Bergeim[3] and Zucker, Johnson, and Barnett[4] respectively, by relatively large quantities of appropriate substances and those produced by relatively small quantities of vitamin D-bearing material.

[1] T. F. Zucker and M. V. Matzner: Proc. Soc. Exp. Biol. Med., 1923, xxi., 186.
[2] H. Jephcott and A. L. Bacharach: Biochem. Jour., 1926, xx., 1351.
[3] O. Bergeim: Jour. Biol. Chem., 1926, lxx., 35.
[4] T. F. Zucker, W. C. Johnson, and M. Barnett: Proc. Soc. Exp. Biol. Med., 1922, xx., 20.

We entirely agree with the observations of Leigh Clare and Soames that there is great variation in the vitamin D content of cod-liver oils. We recently made a comparison of a number of oils with those which we have been using as our own raw material, as well as with a standard based on our examination of more than 200 samples of cod-liver oil during the last three years. Their relative vitamin D potency was as follows:—

A	100	Samples of our own oil before treatment.
B	113	
C	111	
D	108	
E	78	"Finest medicinal cod-liver oil"—one sold under a brand name.
F	53	
G	45	
H	90	Two samples of cod-liver oil sent from Cuba.
I	80	
J	86	Concentrates claiming twice the vitamin D content of cod-liver oil.
K	92	
L	500	Solutions of irradiated ergosterol sold under brand names.
M	230	

Our own preparations we standardise to 2000, on the basis of a 20 times concentration of "standard" cod-liver oil of potency 100.

I am, Sir, yours faithfully,

H. JEPHCOTT, M.Sc., F.I.C.

Ostelin Department, Glaxo House, Osnaburgh-street, London, N.W., Jan. 24th, 1928.

CANCER OF THE RECTUM.

To the Editor of THE LANCET.

SIR,—The report on cancer of the rectum, published by the Ministry of Health and summarised in your issue of Jan. 21st (p. 152), is a most valuable piece of work and its authors should be congratulated on the very painstaking manner in which they have carried out a most difficult investigation. My object in writing is to point out that the impression given by the report is much too pessimistic, and that valuable as the report is, it does not give a true picture of the prognosis in rectal cancer at the present day, nor should it be considered from that point of view.

The report covers the whole history of the development of operations for rectal cancer from the time of the Allinghams and Cripps to the present time. During this period very great improvements have taken place in the operative technique and in the results obtained. It is only just recently that any attempt has been made to realise a standard technique in such cases and no very general agreement has even yet been reached. Some surgeons are now recognising certain operative procedures as the best ones, but it is only within the last few years that any large numbers of cases treated by one standard technique have been performed. The figures in the Ministry's report include all the early cases, such as the operations of Allingham, Cripps, and Kraske, which have been completely out of date for a long time. It follows that both the mortality-rate and the survival-rate in the tables are quite unduly pessimistic as regards present-day conditions. Were it possible to compare the figures for the last decade with one of the earlier decades there would be a very marked difference, which, of course, cannot be brought out in the tables. For instance, the chief causes of death in the mortality tables are sepsis and shock, which account for no less than 370 out of a total of 452 deaths. Both these causes of death have been very greatly reduced by modern technique, and deaths from these causes should seldom occur at the present day. Again, the more extensive resections of the present day give a much better survival-rate than is indicated by the figures in the report. The chances of survival after a perineal operation for an average case of cancer of the rectum on a five years' basis (the tables only take a three years' basis) is over 50 per cent., while the chances for a case above the average, that is to say, an early case, is nearly 75 per cent.

Another most important factor cannot be allowed for in the tables. In the early days of operations for rectal cancer only the very favourable cases where the growth was within easy reach and comparatively small were operated upon, the remainder being considered inoperable. With the improvement in the technique the limit of operability has been very much extended, so that a far large proportion of cases are now operated upon than was formerly the case. This, while it improves the true figures—namely, the number of cases cured out of 100 cases of cancer diagnosed (a figure which up to the present no one has worked out)—tends to give *a worse impression* of the figures based only upon cases operated upon. The tables show clearly the advantages of the perineal operation over the combined route for the removal of rectal growths where this is possible, and this conforms to modern experience.

There is one conclusion from the tables which I believe to be entirely erroneous. The tables appear to show that cancer of the rectum in young persons does not kill more rapidly than in older patients. This is contrary to all surgical experience. In my experience most of the young patients (under 30 years of age) who get cancer of the rectum are found to be hopelessly inoperable when first seen; this cannot be shown in the tables. I have personally never seen a case of cancer in a patient under 30 who survived more than a few months, whether operated upon or not.

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY.

Hyde Park-place, W., Jan. 28th, 1928.

COMMISSIONS IN THE R.A.M.C.

To the Editor of THE LANCET.

SIR,—Colonel J. Griffiths's letter of Jan. 21st showed the wisdom that any of his old fellow students of years ago would expect. He thinks the advantages of the R.A.M.C. are "almost beyond the conception and belief of the medical student. Would-be entrants are, however, few," and lest the splendid post-graduate college is scrapped, he would pass some or all of the medical officers for overseas through it. Certainly every free-trade nation has, in the past, been forced to economise on its defensive services. The benefits of the Service career are regular, and now increased, pay, no bills to send in, fixity of tenure, constant help from friendly colleagues, use of laboratories, and post-graduate instruction without cost. The drawbacks are changes of station (to many their own compensation) and involuntary retirement, by which the general practitioner's best years are lost. But there is the pension.

I submit that the attitude to the defensive services is wrong. Recruiting is encouraged, the men are well looked after in their services, but places are not provided for them afterwards. Vocational training is provided by the services. The Admiralty qualifies men for the City and Guilds of London Institute's certificate, which puts its electricians on an equality with others from outside when applying for posts. Why should not we see that the same thing is done for the best of the other ranks in the R.A.M.C. and the sick berth staff? I probed this when in the Service, but the time was not auspicious. The Navy has not the large scope of the Indian Service and the R.A.M.C., but I cannot see why it is not joined with the Metropolitan Asylums Board, with which I served for a short time in the war. It would take courage and time to make the change, passing officers from one to the other every two or three years. Further, why should not officers be encouraged by their Directors-General to apply for billets in the health or other services; they will have done something for their country in their spells of active service. And they would only capture civil posts if of special record; some would certainly succeed, for we have such conspicuously among us. And the more good men advertised the Services by winning good appointments, the better would recruiting become.

I am, Sir, yours faithfully,

Piccadilly, W., Jan. 27th, 1928. W. E. HOME.

AURAL SYSTEMIC INFECTION.

To the Editor of THE LANCET.

SIR—I am deeply indebted to a letter which appeared in your issue of Jan. 7th from Mr. H. Ross Souper in regard to the effects he obtained from the use of antistreptococcus serum in cases of aural systemic infection.

A nurse at Cheltenham General Hospital became ill at 3 A.M. on Jan. 1st with vomiting, sore-throat, general aching, and malaise. The following day there was follicular tonsillitis, and on Jan. 4th there was severe hæmaturia. On Jan. 6th there was acute pain in the right ear with slight œdema over the mastoid, followed by profuse otorrhœa the following day. On Jan. 10th cellulitis appeared on each side of the nose, and spread over the whole face; small blebs formed over both cheeks and on the forehead. The patient had spasms of hiccough. On Jan. 12th there was repeated vomiting. The temperature fluctuated up to 104° F. On Jan. 13th streptococci were recovered from blood taken from a vein in the elbow on Jan. 11th. The patient now looked dangerous ill, and I felt anxious about her recovery. On Jan. 14th 15 c.cm. of *Scarlet Fever* Antistreptococcus serum (P., D. and Co.) were injected into the glutei. The temperature fell to normal in 12 hours, and did not again rise above normal. The otorrhœa and the cellulitis of the face cleared up in a few days, the hæmaturia ceased in 48 hours, and the albumin fell from 3½ parts to ½ per 1000. The improvement in her whole condition was dramatic. I should mention that I had the collaboration of my colleague, Mr. N. H. Pike, in the treatment of the ear, and of Dr. J. B. Davey in the pathology of the case.

I am, Sir, yours faithfully,

Cheltenham, Jan. 30th, 1928. J. RUPERT COLLINS.

VITAMIN B AND THE ALIMENTARY CANAL.

To the Editor of THE LANCET.

SIR,—A number of communications have appeared recently in which evidence was brought forward that vitamin B exerts its action principally on the alimentary canal; thus Rowlands and Browning in your issue of Jan. 28th report dilatation of the stomach in vitamin B deficiency and refer to their previous finding of impaired motility of the intestines in this condition. It is perhaps worth drawing attention to older work, which has apparently been overlooked, in which very similar conclusions were come to, at a time when biochemical opinion inclined strongly to the view that vitamin B (and the other accessory food factors) were necessary for the normal metabolism of cells in general and did not exert a selective action on the functions of special organs or tissues.

Thus Lumière [1] fed pigeons on decorticated rice and noticed a marked diminution of intake of food. There was evidence of stasis in the upper part of the digestive tract. Trituration in the stomach was defective and the onward passage of the bolus through the pylorus was greatly delayed. There was deficient glandular secretion and hypotonus of the intestinal wall. A small dose of extract of rice polishings provoked abundant glandular secretion and strong intestinal movements which resulted in rapid evacuation of the masses of polished rice lying in the upper intestine; Kerr found in experiments on dogs [2] and I found in the case of rats [3] that in the absence of vitamin B the intake of food was greatly diminished; when the vitamin was restored to the diet food consumption was increased. Cowgill [4] utilised these results as a test for the presence of vitamin B in different foodstuffs. He found that the potency in promoting appetite ran parallel to the potency in relieving symptoms in polyneuritic animals. Cramer and his co-workers showed in their important paper in THE LANCET [5] that in vitamin B deficiency there was lymphopenia, atrophy of the lymphoid tissues of the intestine and elsewhere, and defective absorption of fat. Both Cramer and I showed [6] that the stomach was dilated in this condition, and that there was probably "some defect in the power of the stomach to deal with its contents and propel them farther down the intestine." I suggested that the low food intake could be explained as follows: "The stomach is never empty; it is always partly distended with fermenting material. Hunger contractions do not take place, the craving for food becomes low, and the intake falls off."

The lowered food intake does not account for all the symptoms of the vitamin deficiency; Forster, for instance, found that dogs succumb more readily on a vitamin-free diet than when completely deprived of all food. It appeared from Cramer's observations and my own that the unhealthy condition of the intestine might result in toxic absorption which adversely affects the general health of the animal. The symptoms of beri-beri might be explained as being due to the absorption of poisons which damage the nervous or vascular systems, giving rise to the dry and wet forms of the disease.

I am, Sir, yours faithfully,

SAMSON WRIGHT.

Middlesex Hospital Medical School, Jan. 28th, 1928.

[1] Bull. de l'Acad. Méd., March, 1920; Presse Médicale, 1920, No. 20.
[2] Jour. Biol. Chem., 1920, xliv., 255.
[3] THE LANCET, 1921, ii., 1208.
[4] Proc. Soc. Exp. Biol. and Med., xviii., 290.

THE APPARENT INCREASE OF CANCER.

To the Editor of THE LANCET.

SIR,—Will you permit me to say a few words on the annotation under this heading in your issue of Jan. 28th? It is to be regretted that my illustration of the difference between crude and standardised rates should appear to have done an injustice to Dr. Stevenson, and I will substitute, if I may, a comparison between similar rates for the buccal cavity in 1901–05 and 1925, as in your opinion it is preferable to take a group of years. In this period the crude rate per million rose from 113 to 142 while the standardised rate fell from 154 to 142, the standardised figures being 2834 and 2649, a fall which does not appear to be recorded in either of Dr. Stevenson's reports.

Your defence of the, to me, artificial division of sites into accessible and inaccessible rests on diagnostic facilities. There has been no increase of such facilities in regard to the buccal cavity, which must be regarded as a whole not only from the close anatomical relationship of its sites, but because, as a reference to the table given on p. 550 of the annual report for 1913 shows, even so recently as 1912, at no site in the group can the records be accepted as an accurate statement containing all deaths due to a primary cancer at that site and no others. There has been sufficient overlapping of sites to make it necessary to treat the group as a whole. Since 1901–05 there has been no increase of diagnostic facilities and no increase of cancer in the buccal cavity. At the other extreme there has been a marked increase of diagnostic facilities—e.g., X rays and bismuth meals, bronchoscopy, and genito-urinary surgery, and a coincident large increase of cancer at the sites corresponding. Diagnostic facilities may be a perfectly sound basis for instituting a comparison, but they do not form the distinguishing character between the groups termed accessible and inaccessible. The distinction made by the U.S.A. inquiry was between certain and uncertain diagnoses, a distinction which seems to me quite valueless for purposes of comparison.

I may add that a solution of the problem of the increase of cancer is not so much of importance in order to allay the alarms of the public as because it has a direct bearing on causation and hence on the direction in which research should move. It should be

[5] THE LANCET, 1921, ii., 1202.
[6] Loc. cit.

taken, if possible, out of the region of personal opinion; and we can start with the fact that cancer of the male buccal cavity has not increased from the beginning of the century up to 1925.

I am, Sir, yours faithfully,

London, Jan. 28th, 1928. D. F. SHEARER.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—I should like, as a general practitioner, to thank Prof. MacLean and his collaborators for their excellent and helpful article on the intensive alkaline treatment of gastric and duodenal ulceration. In the course of work as a hospital resident I have seen excellent results follow various other forms of medical treatment, but each of these required (*a*) special diet governed by long tables, (*b*) skilled nursing. These necessities make such treatment difficult for those whose work lies in small towns or villages scattered throughout Great Britain, and it was surely for such rather than for the pundits of Harley-street and Wimpole-street. It offers a method which can be quite easily carried out in the patient's own home, be that latter a two-roomed cottage.

Hundreds of general practitioners will be exceedingly glad if they can get immediate results as good as those put forward in the articles from St. Thomas's. Why should we be refused the information which will make this possible whilst cases are watched, like organisms under a microscope, for another 5, 10, 15, or 20 years? I, for one, feel deeply grateful to Prof. MacLean and his colleagues for having preferred to expose themselves to the accusation, by implication, of being unfair, unscientific, and extravagant. Very few can have read into the article in question any claim to infallibility.

One would like to hear from Dr. Ryle what proportion of men engaged in general practice can find the time, even if they have the inclination, to verify references given in the average bibliography.

I am, Sir, yours faithfully,

DONALD M. O'CONNOR.

Malmesbury, Wilts, Jan. 27th, 1928.

To the Editor of THE LANCET.

SIR,—May I, as one who was employed in general practice for 28 years and who has not long come from it, express the gratitude I felt on reading the paper by Prof. Hugh MacLean and his colleagues in the issue of Jan. 7th, the substance of which was so important and whose value to me was enhanced by the manner in which it was presented. My only regret was that such a fundamental matter was not settled years ago, for in retrospect one can see what relief might have been given to numbers of cases had one not been afraid of alkalosis, a bogy which is now laid low for ever.

To me it would be no surprise to hear that hundreds of people have been relieved already with an expeditiousness directly due to the fact that the paper was unencumbered with references. Time for reading is hard to find in any busy practice and my impression is that many do as I did; that is, read the papers with few or no references first and reserve those with a long list attached to them until one has the leisure to read them.

My recollection of Prof. MacLean's papers in the past is that they were rather of the latter kind, intensely interesting, but requiring much time to enjoy them thoroughly. Can we hope he may be persuaded to give us more in his recent vein? Were he to prove that other things which stay our hands at present are only bogies such relief, such gratitude would come, that few indeed will be found so churlish as to say this or that part of the work was only confirmatory—our sense of obligation would be too great.

I am, Sir, yours faithfully,

Guildford, Jan. 31st, 1928. HERBERT W. NOTT.

THE FUTURE OF MEDICAL PRACTICE.

To the Editor of THE LANCET.

SIR,—Dr. Cyril Doyle in your issue of Jan. 28th on the Future of Medical Practice asserts that "other clinics—e.g., tonsils and adenoids, dental, maternity, and child welfare—are becoming increasingly unpopular with the patients and the practitioners, so also are the poor-law hospitals." With regard to the latter point I agree with the statement of Dr. J. C. Muir in THE LANCET of the same date, that the poor-law hospitals are becoming increasingly popular. Might not Dr. Doyle wait a few more years before he can judge so important a matter?

I have had 12 years' experience of general practice and 18 years as medical officer of health and school medical officer. When I first commenced my duties as school medical officer we had about half a dozen patients in attendance at the clinics; now we average between 80 and 90, disproving the unpopularity of the clinics. The general practitioners in this borough frequently refer cases to the clinic for treatment.

Dr. Doyle states that "the reasons for the unpopularity of the clinics are not difficult to trace, because the general practitioner who has charge of the patient after clinic treatment hears the patient's ideas and is able personally to observe the result of such treatment." But the operations for tonsils and adenoids are usually performed at hospitals and the cases are notified to the school medical officer to follow up—not to the general practitioner.

He further states "that compulsory medical examination at school sometimes leads to expressions of opinion by the school doctor which differ from opinions previously given by the family practitioner. These occasional conflicts of opinion do much towards weakening faith in school doctors." This is usually the reverse. He also says that "many a mother brings her child to me to enucleate its tonsils or to 'give it an overhaul' rather than go to the provided centre." I have always understood that consultants would only see cases referred to them by general practitioners.

Statistics show that the greatest reduction in the mortality-rate is chiefly in the poor localities, because it is the poorer people who are encouraged to attend the welfare centres. Our infant mortality-rate in 1904 was 154 and 56 in 1926. I should like Dr. Doyle to visit any of our clinics to see and hear for himself as to the alleged "unpopularity of clinics." He would find that it is not for "the desire to get something for nothing," as he states, but to obtain treatment that would otherwise not be obtained. I would further suggest that he obtains and reads Sir George Newman's report on "The Health of the School Child."—I am, Sir, yours faithfully,

W. BENTON,
M.O.H. and School M.O., County Borough of East Ham.

Jan. 30th, 1928.

NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—Your leading article of Jan. 28th states the position with an admirable clearness and breadth of vision, but such clearness is by no means general, and it sometimes happens that scientific controversies are entirely based on the different meaning attributed to the same word by various writers. The Ministry of Health has recently and most usefully defined what is meant by "quiescent, arrested, and cured," when applied to pulmonary tuberculosis, and it would be similarly advantageous if an equally authoritative body would bring up to date the accepted meaning of many words currently used in scientific medicine. The duties of such a definition committee would be largely dictionary work, plus recommendations. No finality would be attained or even aimed at. Sir Almroth Wright has often pointed out that clearness of thought depends on a clear terminology.

I am, Sir, yours faithfully,

Paignton, Jan. 28th, 1928. E. WARD.

Obituary.

ROBERT ARTHUR MILLIGAN, O.B.E., M.D. DURH., J.P.

BY the death of Dr. R. A. Milligan on Jan. 25th Northampton loses one of its outstanding citizens and a medical man who was justly held in great esteem in the town and county. Born at Dean, near Kimbolton, he came of a Scottish family, and was educated at Clevedon College, Northampton. When only 17 years of age he attached himself to the practice of Northampton Hospital, proceeding later to Guy's where he showed himself an all-round athlete. He qualified as M.R.C.S. in 1881, and after acting as house surgeon and resident obstetrician at Guy's, and anæsthetist at the Evelina Hospital, he returned to Northampton and was appointed surgeon to the General Hospital there. In the 40 years during which he held this post he acquired an immense experience, and established a reputation which led practitioners over a wide area to ask his help in difficult surgical and obstetrical cases. In addition to surgical practice, Dr. Milligan was senior medical officer to the venereal clinic for Northampton, and he was one of the pioneers in the ambulance movement in the neighbourhood. At the outbreak of the war he gave up his private work to take a major's commission in the Royal Army Medical Corps and gave able service in the First Eastern General Hospital at Cambridge. In recognition of this work he was made an Officer of the Order of the British Empire. Dr. Milligan became a magistrate in 1908 and served as alderman on the town council for 23 years, presiding over the public health committee; his professional duties made it impossible for him to accept the office of mayor, which was several times offered to him. He was also keenly interested in Rugby football, and seldom missed attending a match on the local ground, where his professional services were often called upon.

A colleague and former house surgeon, to whom we are indebted for some of these biographical details, writes of him as follows: "Dr. Milligan was a man of imposing physique, whose bluff and cheery manner made him popular with all classes. Of wide experience and sound judgment, he made up his mind quickly and was seldom wrong in diagnosis or prognosis. As an operator, if not brilliant, he was essentially sound, and he obtained results surpassed by few. Although not carried away by passing fads, he was quick to adopt new methods. A man of few words in professional matters, he inspired great confidence in his patients. He loved his hospital work, and although his large figure and loud voice tended to alarm a new probationer, the nursing staff were devoted to him. The amount of work that he did for nothing will never be known, but it was a common complaint, even among the comparatively well-to-do patients, that they could not get a bill out of him. None knew better than he the end he might expect and he faced it courageously."

Dr. Milligan leaves a widow and four daughters; a fifth daughter died three years ago.

CLAUDE WILLIAM SCOTT SABERTON, M.D. MANCH., D.M.R.E.

WE have to record the death at Bournemouth on Jan. 16th of Dr. C. W. S. Saberton. Elder son of the late Dr. F. W. Saberton, of Manchester, he was educated at Owens College, and graduated as M.B. in the Victoria University in 1901. After a period as demonstrator of anatomy at Owens College, he practised for a short time as his father's partner, but early in his career he became interested in radiology and moved to Bournemouth where he was appointed hon. radiologist to the Royal Victoria and West Hants Hospital. Never robust, the strain of war-time work was responsible for his early exemption from military service, and in 1916 he went to Harrogate where he was appointed hon. radiologist to the Infirmary and to the Royal Bath Hospital. It was characteristic of him to undertake this work at a time when his physical condition would have justified him in avoiding any additional strain, and he put his fullest energy and enthusiasm into his hospital as well as his private practice. He took the D.M.R.E. at Cambridge in 1921, and during his seven years in Harrogate established a reputation as a leading radiologist. A pioneer in the application of diathermy he was also one of the first to introduce the deep X ray treatment into England, having made a journey to Erlangen to study the technique. His interests were various, and he was well known at St. Moritz as a skilful curler. Ill-health, however, forced his retirement a few years ago and he went back to live at Bournemouth. "Saberton," writes a colleague, "will be remembered by all who had the privilege of knowing him as one of the kindest and most generous of men. He made a very gallant fight against the ailment which caused his early retirement from practice in 1923, and which ultimately caused his untimely death."

He leaves a widow and one daughter.

JAMES CLEMENT BAXTER, L.R.C.P. IREL., J.P.

THE death occurred on Jan. 27th at his home in Everton, Liverpool, of Dr. J. C. Baxter, at the age of 71. A native of Liverpool, he was educated at St. Xavier's College, studied at the Liverpool School of Medicine, and qualified as L.R.C.P. in 1878. His practice in the district was considerable, and outside medical circles he was well known for his interest in Association football, serving for 38 years as a director of the Everton Football Club. He also acted as medical adviser to the club until a few years ago when he was succeeded in this office by his son, Dr. C. S. Baxter. He was appointed a magistrate for the city of Liverpool in 1906, and from that year until 1920 was a member of the city council. Dr. Baxter leaves a widow and two sons, both of whom are members of the medical profession.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. W. R. S. Panckridge to *Alecto* and S. G. Weldon to *Veronica*.

Surg. Lt. G. S. Rutherford to rank of Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lts. D. C. Livingston and D. R. Goodfellow to be Surg. Sub-Lts.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. F. Shea, having attained the age fixed for compulsory retirement, retires on ret. pay.

Maj. H. St. M. Carter to be Lt.-Col.

Maj. B. H. H. Neven-Spence is re-empld. under Art. 507 (*b*), Royal Warrant for Pay and Promotion.

The undermentioned Capts. to be Majs. (Prov.): W. Millerick and R. Johnson.

Temp. Capt. J. W. Darling relinquishes his commn. and retains the rank of Capt.

W. G. Rees to be Temp. Lt.

Lt. on prob. P. G. Bentlif resigns his commn.

ARMY DENTAL CORPS.

Lt.-Gen. Sir T. H. J. C. Goodwin, K.C.B., C.M.G., D.S.O., ret. pay (Res. of Off.), late R.A.M.C., to be Col. Comdt.

Capt. G. F. Charles to be Maj.

ARMY RESERVE OF OFFICERS.

Col. A. W. N. Bowen and Lt.-Col. G. H. Goddard, having attained the age limit of liability to recall, cease to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. W. W. MacNaught, Res. of Off., to be Capt.

Lt. T. D. Overend to be Capt.

R. N. Kinnison to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. D. E. Finlay, having attained the age limit, relinquishes his commn. and retains his rank.

Hygiene Companies.—Lt. R. E. J. Currell, from the Active List, to be Lt.

INDIAN MEDICAL SERVICE.

To be Temp. Lts.: Prag Nath Kapur, Diwan Chand Chopra, Jaswant Singh, and Prabhakar Narayan Gokhale.

Lt.-Cols. J. C. H. Leicester and H. M. Inman retire.

ROYAL AIR FORCE.

Temp. Capt. R. G. J. Charlesworth (Dental Surgeon, General List, Army) is granted a temporary commission as Flight Lt. on attachment to the Royal Air Force.

Flying Officer C. J. S. O'Malley is promoted to the rank of Flight Lt.

Brevet Col. W. R. P. Goodwin, D.S.O., R.A.M.C., has been appointed Honorary Physician to the King in succession to Maj.-Gen. S. F. St. D. Green, C.B., C.B.E., late R.A.M.C., who has retired; and Col. R. W. Knox, D.S.O., I.M.S., and Col. C. Hudson, C.B., C.I.E., D.S.O., I.M.S., have been appointed Honorary Surgeons to His Majesty.

Medical News.

UNIVERSITY OF OXFORD.—Dr. F. A. Dixey, F.R.S., late Subwarden and Bursar of Wadham, has been elected to an Emeritus Fellowship at that College.

UNIVERSITY OF CAMBRIDGE.—At recent congregations the following degrees were conferred:—

M.D.—A. A. Gemmell and E. H. V. Hodge.
M.B. and B.Chir.—E. S. Bolton, W. F. Cooper, and C. P. Pinckney.
M.B.—W. G. S. Hopkirk.
B.Chir.—J. W. D. Buttery and D. F. Lawson.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on Jan. 26th, with Sir John Rose Bradford, the President, in the chair. The following candidates, having satisfied the Censor's Board, were elected Members of the College:—

Roland George Anderson, Godfrey William Bamber, Donald Campbell, Clement Clapton Chesterman, Ronald Cove-Smith, William Hofmeyr Craib, Sheldon Francis Dudley, William Norwood East, Abd el Kader Hilmi El-Shurbagi, William Evans, John Rex Godsall, Cecil William Hutt, Una Christina Ledingham, Noel Vernon McKenna, Basil William Sholto Mackenzie, Richard Glyn Maliphant, Phillip Justin Markell, Albert Victor Neale, Alexander Adam McIntosh Nicol, Charles Bruce Perry, Ronald Arthur Phillips, John Douglas Procter, Reginald Hans Taylor Rea, Abd el-Azim Yousif Mostafa Salama, Sydney Watson Smith, Howard Hilton Stewart, Charles Cady Ungley, Marion Boyd Wanliss, and Lawrence Stuart Woolf.

Licences to practise were conferred upon 120 candidates (92 men and 28 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates:—

R. Anderson, Cambridge and Birmingham; G. D. Augenlicht, Rostov and Westminster; L. Bernard, London; F. G. Booker, Cambridge and Guy's; G. N. Box, St. Thomas's; M. S. R. Broadbent, Cambridge and St. Bart.'s; J. W. Bromley, Cambridge and London; C. E. S. Bullen, Leeds; Eleanor M. Carless, Royal Free; A. M. Chaudhuri, Calcutta and St. Bart.'s; S. S. Chesser, Cambridge and St. Thomas's; T. L. Cleave, Bristol; G. A. Coggin, London; C. N. Cohen, Guy's; C. C. Cookson, Birmingham; N. Cox, Manchester; Pera R. C. Crawford, Royal Free; W. S. Creer, Liverpool; D. S. Davies, Oxford and Guy's; E. R. L. Davies, Cardiff; Helena M. de Hartog, Royal Free and St. Mary's; M. M. Dey, Leeds; Olivia F. Digby-Smith, Cardiff; H. Doyle, Calcutta and St. Mary's; M. R. Doyle and C. B. Drew, St. Thomas's; J. St. C. Elkington, Cambridge and St. Thomas's; Alexandra G. H. English, Royal Free; A. G. Ensor and H. Epstein, Guy's; M. M. Fikri, Cairo; John Foster, Cambridge and London; H. D. F. Fraser, St. Bart.'s; Mabel O. Cassels Freeston, Royal Free; T. R. Gaha, Sydney and St. Mary's; P. J. Ganner, Birmingham; Caterina P. Giles, Cambridge and King's Coll.; E. M. Goitein, University Coll.; R. A. P. Gray, Cambridge and St. Bart.'s; C. R. Green, Oxford and Westminster; C. S. Gross, Guy's; Bridget S. P. Gurney, Royal Free; B. Haring, Manchester; R. M. J. Harper, Oxford and St. Thomas's; J. Harris, Adelaide and London; R. L. Harward, Guy's; N. F. Haslam, Birmingham; J. C. Hatrick, University Coll.; L. Hennell, Manitoba and Middlesex; Margaret A. L. Herbertson, Oxford and King's Coll.; Anna M. Hilliard, Toronto; E. A. H. Hindhaugh London; N. M. Hodivala, Bombay and London; Josephine M. Howells, Westminster; W. H. Hubert, Cambridge and St. George's; W. L. Hurn, St. Bart.'s; A. L. Hyatt, Middlesex; Dorothy M. James, Cardiff; D. C. R. R. Jenkins, St. Bart.'s; I. J. Jones, St. Thomas's; R. T. Jones, Cardiff and Guy's; H. Kaltz, Guy's; Alison R. Kerridge, Royal Free; A. K. M. Khan, Bombay and Middlesex; P. Kuhne, Lausanne and Charing Cross; T. E. Lamech, Cambridge and St. Thomas's; B. A. Lamprell, King's Coll.; W. J. Lloyd, Cambridge and St. Bart.'s; Margaret I. Meacock, Cardiff and Westminster; A. A. Miles, Cambridge and St. Bart.'s; Mary M. Moller, Royal Free; C. F. Moore, St. Bart.'s; C. S. Morgan, St. Thomas's; W. H. Myburgh, Cape and Guy's; J. J. O'Donoghue, London; Lois J. Ogle, Royal Free; E. N. O'Neill, St. Mary's; Ella M. Oswald, Royal Free; T. N. Parish, King's Coll.; W. E. C. Parry, Cambridge and University Coll.; P. I. Peltz, St. Bart.'s; P. P. Peries, Ceylon and King's Coll.; C. D. Politeyan, Cambridge and St. Thomas's; A. E. Porritt and Monica M. M. Power, St. Mary's; J. C. Preston, Manchester; Agnes M. Ramsbotham, Royal Free; W. G. Richards, St. Thomas's; J. H. Richmond, Cambridge and Guy's; T. McK. Robb, Guy's; F. E. Roberts, Birmingham; Elizabeth J. Robinson, King's Coll.; Florence E. Robinson, Royal Free; R. S. Rudland, Birmingham; Margaret M. Russell, King's Coll.; R. W. Sabonadiere, St. Thomas's; W. J. M. Sadler, University Coll.; H. A. Seidenberg, St. Bart.'s; Doris G. Sharvelle, King's Coll.; D. C. Shields, St. George's; Clarice A. Skidmore, St. Mary's; T. E. Skinner and W. D. Steel, Birmingham; G. Steinberg, Bristol; W. P. R. Swemmer, Guy's; B. A. Taylor, Manchester; Dorothy Tims, Charing Cross; Ruth M. W. Turner, Cambridge and St. Mary's; D. R. Tweedie, Cambridge and St. Bart.'s; G. P. A. van Rossum, Cape and St. Bart.'s; J. A. Vernon, Guy's; Elizabeth H. Waller, Charing Cross; H. S. Waters, Cambridge and St. Mary's; K. H. Watkins, Manchester; I. Waynik, Cape and Charing Cross; C. H. C. White, Guy's; H. O. White, St. Bart.'s; Hannah E. Wilby, Royal Free; E. A. Wood, University Coll.; and N. R. W. Wynn Williams, Middlesex.

A supplemental list of licentiates will be issued later for the candidates whose examination is still in progress.

The undermentioned diplomas were also conferred, conjointly with the Royal College of Surgeons, to the following candidates:—

Diploma in Psychological Medicine.—W. A. Caldwell, L. C. Cook, I. Frost, N. G. Harris, E. J. C. Hewitt, R. G. B. Marsh, N. R. Phillips, R. P. Rees, and H. H. Steadman.
Diploma in Laryngology and Otology.—H. Bahgat, R. E. Buckingham, H. S. Chhachhi, H. A. Cowan, S. Dayal, E. M. Dearn, H. G. Downer, R. A. Highmoor, Barbara M. Logan, P. MacMurray, J. H. O'Donnell, A. M. Ross, S. S. Sen, J. J. Stander, P. Subbaramayya, and H. L. Vaidya.
Diploma in Public Health.—F. Asker, A. D. Belilios, F. J. Benjamin, W. A. Brown, Isabella M. G. Butler, Dorothy M. Catchpool, N. E. Chadwick, Nancy M. Coutts, A. V. B. Crawford, R. N. Curnow, Gweneth M. Daniel, Hilda C. Dean, E. L. F. De Mel, Kathleen Dickinson, Christabel S. Eyre, Nancy K. Gibbs, Gladys Gounent, W. H. Hamilton, R. S. Johnson, M. H. Khan, F. E. R. Laborda, Eroica R. Lewis, K. L. Malhautra, H. L. Malhotra, Ethel W. Morris, G. Napier, H. A. A. Pargeter, B. L. Patney, K. P. Pillai, T. A. Seekings, S. R. A. Shah, Kathleen Shelton, C. H. C. Toussaint, S. N. Wasti, P. L. Whig, and C. A. Wood.
Diploma in Ophthalmic Medicine and Surgery.—H. K. Basu, J. C. Bringan, A. E. F. Chaffer, E. J. Collins, S. Dayal, G. I. Evans, B. F. Eminson, E. R. Jagger, M. S. Katre, B. Kay, R. B. Khare, L. R. Lalwani, G. D. Malhoutra, M. A. Mithavala, D. Patwardhan, W. J. Riddell, Louie A. Rubidge, D. D. S. Stewart, and C. R. Verling-Brown.

Dr. A. E. Russell was elected to the Council in the place of the late Sir Percy Bassett-Smith.—Communications were received: (1) from the Secretary of the Royal College of Surgeons; (2) from the Medical Secretary of the British Medical Association; (3) from the President and Council of the Institute of Chemistry of Great Britain and Ireland.—Dr. Monckton Copeman was appointed to represent the College at the Thirty-ninth Congress of the Royal Sanitary Institute.—Sir Leonard Rogers was appointed as delegate to the centenary celebration of the Faculty of Medicine, Cairo, in response to the invitation of the Minister of Education of the Kingdom of Egypt.—Communications were received from the President of the University of Toronto and from Dr. R. D. Rudolph with reference to the recent celebration of the centenary of King's College, Toronto.—A report was received from the representative of the College on the General Medical Council.—Dr. C. O. Hawthorne reported on the Departmental Committee of the Optical Practitioners Registration Bill.—Books and other donations to the library presented during the last quarter were received and thanks were returned to the donors.—The annual report of the examiners for the Licence on the examination held in the year 1927 was received.

MEDICAL FACULTY OF INNSBRUCK.—Prof. Georg B. Gruber, Dean of the Faculty, announces the holding of a post-graduate course for practitioners at Innsbruck from March 12th to 18th. Each morning is occupied from 8 to 1 with a series of five systematic lectures or demonstrations in medicine, surgery, or special subjects, and again from 3 to 5 in the afternoons except Wednesday. Instruction is given in each case by the professor in the Faculty. There is an entrance fee of 20 schillings (about 14*s.*), and all who wish to take part should register before March 10th with the Dean of the Medical Faculty, Innsbruck.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful:—

Surgery.—G. N. Fox, St. Bart.'s Hosp.; A. W. Lassowsky, Basle and Middlesex Hosp.; and J. R. Mitchell, Liverpool.
Medicine.—G. N. Fox, St. Bart.'s Hosp., and D. I. Jones, Univ. Coll. and St. George's Hosp.
Forensic Medicine.—G. N. Beeston, Charing Cross Hosp.; B. P. Jones, Manchester; D. I. Jones, Univ. Coll. and St. George's Hosps.; A. W. Lassowsky, Basle and Middlesex Hosp.; and J. R. Mitchell, Liverpool.
Midwifery.—W. B. Hallums and H. T. Ince, St. Mary's Hosp.; E. A. Johnstone, Manchester; and H. D. K. Wright, St. Bart.'s Hosp.

The Diploma of the Society entitling candidates to practise medicine, surgery, and midwifery was granted to D. I. Jones and A. W. Lassowsky.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on Jan. 25th Mr. M. E. Delafield, M.B. Camb., D.P.H., was appointed as from a date to be determined subsequently to the University Chair of Chemistry as applied to Hygiene, tenable at the London School of Hygiene and Tropical Medicine. Dr. Delafield was educated at Merchant Taylors' School, Jesus College, Cambridge, and St. Thomas's Hospital. He took a first class in the Natural Science Tripos in 1907, and graduated as M.B. in 1910. From that year until 1916 he was engaged in medical practice, and from 1915–16 was a temporary medical school inspector for the London County Council. He saw military service from 1916 to 1919, being awarded the Military Cross, and for the next five years was deputy medical officer of health for Stoke Newington and head of the Sanitary Science Department of the L.C.C. Hackney Institute. From 1920–24 he was also assistant in the Department of Public Health and Hygiene at University College, and since 1925 he has been head of this department.

Dr. E. L. Kennaway was awarded the William Julius Mickle Fellowship for 1928 in respect of the work he has carried out on cancer research during the past five years. The Fellowship this year is of the value of about £275.

Mr. H. L. Eason was appointed to represent the University on the General Medical Council.

Dr. W. J. O'Donovan, physician to the skin department of the London Hospital, has been admitted to membership of the Faculty of Medicine.

Guy's Hospital Medical School.—Lectures on the Surgery of the Kidney and Ureter will be given at this school by Mr. Graham Simpson on Fridays, Feb. 10th, 17th, and 24th, at 5.30 P.M. Admission free without ticket.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Feb. 6th, at 5 P.M., at the Medical Society of London, 11, Chandos-street, Cavendish-square, W. 1, Dr. R. M. Stewart will lecture on Secondary Forms of Mental Deficiency. On the same day, at 2.30 P.M., at St. Mark's Hospital, Mr. J. P. Lockhart-Mummery will give a clinical demonstration. On Friday, Feb. 10th, from 2 to 3 P.M., at the Paddington Green Children's Hospital, Dr. G. A. Sutherland will give a clinical demonstration, and on the same day, at 5 P.M., at the Royal Westminster Ophthalmic Hospital, Mr. C. L. Gimblett will give a clinical demonstration on Cataract. The lecture and the demonstrations are open to members of the medical profession without fee. From Feb. 6th to Feb. 18th a special course in Diseases of Children will be given at the Paddington Green Children's Hospital and at the Victoria Hospital for Children; sessions will be held alternately at each hospital, and will include lectures, demonstrations, and operations. From Feb. 20th, for four weeks, a course in Venereal Diseases will be given at the London Lock Hospital during the afternoons and some evenings, consisting of clinical instruction and lectures. The course has been postponed from Feb. 6th. As the lectures will only be given if there is an entry of six, early application should be made. From Feb. 20th to March 3rd, at the Queen Mary's Hospital, Stratford, an all-day course will be held in medicine, surgery, and the specialties, at which lectures and demonstrations will be given and operations performed. Information, syllabuses of special and general courses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W.

THE fifth International Medical Congress for Industrial Accidents and Occupational Diseases is to be held in Budapest from Sept. 2nd to 8th. Addresses will be given, amongst others, by Prof. J. Liniger, Dr. F. Zollinger, Prof. K. B. Lehmann, Sir Thomas Oliver, Prof. J. G. Sleeswijk, Prof. Jütten, Prof. Koelsch, Prof. Julius van der Hoeve, and Prof. Stephan Jellinek. Although industrial diseases will receive consideration, particular prominence will be given in the programme to industrial accidents, as in 1929 a congress specially devoted to diseases is to be held in Lyons under the auspices of the Congress for Occupational Diseases. The Council of Industrial Medicine has been nominated to act as the British National Committee, and further information can be had from the Secretary, 12, Stratford-place, London, W. 1.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors, held on Jan. 24th, the sum of £115 was distributed among the several applicants.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held at the Miller General Hospital, Greenwich, on Friday, Feb. 10th, at 8.45 P.M., when Dr. M. Travers Smith will give an address on the Origin and Diagnosis of Cardiac Murmurs.

HOSPITAL DEVELOPMENTS AT LEAMINGTON.—An orthopædic clinic for children under 14 is to be established at the Warneford Hospital, Leamington. The hospital is also about to undertake the training of pupil midwives, which has hitherto been conducted by the Warwickshire Nursing Association with the aid of a grant from the county.

PROPOSED IRISH PHARMACY BILL.—It is understood that the Government of the Irish Free State has been in consultation with representatives of the Pharmaceutical Society of Ireland for the purpose of framing a Bill to govern the practice of pharmacy. The heads of a Bill have been agreed on, and it is probable that legislation will shortly be undertaken.

HOSPITAL NEEDS IN SALFORD.—The Salford Guardians contemplate the provision of considerable additional hospital accommodation at the Union Infirmary. It is proposed to allocate 100 beds to the Corporation and 50 to the Royal Hospital, while the Union Infirmary itself needs 250 additional beds, making a total of 400. Since, however, it is thought desirable to provide a margin of accommodation, it is intended to provide 500 beds in all.

DENTAL PRACTICE IN VICTORIA (AUSTRALIA).—The Acting Agent-General for Victoria informs us of the receipt of a cablegram from his Government intimating that under an Act recently passed in the State the registration of British dentists is restricted solely to licentiates of British medical authorities and that the restrictions apply to all dentists who had not embarked for Victoria prior to Dec. 8th last. Most of the Dominions have, we understand, already made a similar restriction.

A COTTAGE HOSPITAL'S TREASURE.—A few years ago there was left to the Cottage Hospital at Moreton-in-the-Marsh in Gloucestershire a chair reputed to be that in which Charles I. sat during his trial in Westminster Hall. It is stated that the authorities of the Victoria and Albert Museum see no reason to doubt its authenticity, and negotiations for its purchase are far advanced. The chair will be placed in the furniture section of the museum.

BIRMINGHAM DENTAL HOSPITAL.—The annual report of this institution states that nearly 37,000 operations were performed during the past year, an increase of 1000. An extended use was made of local anæsthesia, and the demonstration room is to be equipped with up-to-date electrical appliances, including a compressed air installation which will serve both the conservancy and prosthetic departments. The number of radiographic examinations doubled during the year.

DENBIGHSHIRE HOSPITALS.—A shilling fund in aid of the endowment of the Breconshire War Memorial Hospital has been set on foot. It is intended as a memorial of the late Lord Glanusk, who died in the act of opening the hospital. The committee of visitors of the North Wales Mental Hospital at Denbigh propose to spend £80,000 upon the extension of the buildings. The hospital contains 98 patients over and above the proper accommodation, and lunacy is said to be increasing in the five North Wales counties at the rate of 20 cases per annum.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—On Jan. 30th the officers and staff of this hospital held a festival dinner at the Mansion House, to celebrate the completion of seven years' work, and to attempt to raise the sum of £40,000, to pay for the 200 beds for which provision has already been made at the country branch at Stanmore. In proposing the toast of "The Hospital," Prince Henry, the President, described the miraculous results which took place not only in the physique of the patients but in their mentality, and urged the economy of curing the nation's cripples rather than supporting them. Dr. Graham Little, M.P., who seconded, extolled the virtues of the voluntary hospital system, described the new country branch, and vigorously championed orthopædic surgery against the pretentious modern craft of osteopathy. Mr. H. E. West, the chairman, made a witty reply, at the end of which he drew the guests' attention to the cheques and fountain-pens which had been placed by their sides. The health of "The Guests" was proposed by Mr. Reginald McKenna, and answered by Sir Philip Gibbs. The guests included the Lord Mayor and Corporation, and the mayors of many of the London boroughs. The President announced that the subscriptions and presents received that evening had reached a total of £10,100.

EXTENSION OF LEEDS MATERNITY HOSPITAL.—Princess Mary last week laid the "panel stone" of the first part of an extension which will add two wings to this institution. The cost will be £60,000, of which a little more than half has been raised.

IMMUNISATION AGAINST DIPHTHERIA.—The Manchester Education Committee at its meeting on Jan. 23rd, after considering a report by its subcommittee and a report by the medical officer of health for the city on diphtheria immunisation, adopted a resolution "to approve of the principle of voluntary preventive inoculation against diphtheria. To coöperate with the Public Health Committee in the practical application of a suitable scheme." Nothing will be done until a scheme has been brought before the committee.

DONATIONS AND BEQUESTS.—Mr. Edward Martin, of Bishopsgate, London, left £1000 each to the London Hospital, Dr. Barnado's Homes, and the Salvation Army, and £250 to the Victoria Hospital, Southend-on-Sea.—Sir Edward Burnet James, of Bristol, left £1000 to the Bristol General Hospital, £500 each to the Bristol Royal Infirmary and the Bristol Benevolent Institution.—Mr. Joseph Frederick Read, of Watermillock, Penrith, formerly of Liverpool, solicitor, left, on the death of his wife, £1000 to the Liverpool Open-air Hospital for Children, £500 each to the Samaritan Hospital for Women, Wallasey Cottage Hospital, Liverpool Bluecoat Hospital, the Royal Seamen's Orphan Institution, and £200 to the Eye and Ear Infirmary, Liverpool, and on like conditions one-half of the residue for charitable or philanthropic institutions within a radius of 10 miles from the town hall of Liverpool, as the executors may think fit.—Mr. Henry Westmacott, Manchester, chemist, who left estate of the gross value of £6368, after certain small bequests left the residue of his property, about £5000, to the Manchester Royal Infirmary.—Mr. Algernon Preston, of Penmaenmawr, late of Sale, left £2000 to the Dental Hospital, Manchester, in memory of his son, Dr. Charles Henry Preston.—Miss Matilda Margaret Reid, of Hampstead, left more than £35,000 to charities, including £10,000 to the National Institution for the Blind and Earl Haig's British Legion Fund, and £5000 to Dr. Barnardo's Homes and two other institutions.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 7th.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Cases: Mr. Paul Bernard Roth: Madelung's Deformity after Operation, Flattening of the Head of the Metatarsal Bone. Mr. B. Whitchurch Howell: Malunion of the Phalanges of the Right Hand, A New Orthopædic Operation Table. Mr. E. H. R. Altounyan: Case of Congenital Absence of the Upper End of the Femur (communication). Mr. Rocyn Jones: Arthroplasty of the Temporomaxillary Joint. Mr. H. A. T. Fairbank: Two Cases of Snapping Knees in which the External Semilunar Cartilage Formed Complete Circular Disc. 8.30 P.M., PATHOLOGY. Laboratory Meeting at the Bernhard Baron Institute of Pathology, London Hospital. Demonstrations: H. E. Roaf: Method for Testing Colour Vision. S. P. Bedson: Experimental Herpes in the Guinea-pig. Dorothy Russell: Lesions of the Spore Tetanus. H. D. Kay and R. T. Brain: New Test for Renal Function. H. D. Kay and R. L. Aiken: An Ultra-filtration Method. A. B. Bratten: Pathological Specimens. K. H. Tallerman: Preparation of Collodion Membranes. J. R. Marrack: Osmotic Pressure of Serum Proteins in Nephritis. P. Fildes: Motility of *B. tetani*; Germination of *B. tetani*; Oxidation-reduction Potential Necessary for the Germination of *B. tetani*.

WEDNESDAY.—5.30 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Short Papers: Mr. F. J. McCann: An Operation for Prolapse of the Rectum in the Female. Mr. Zachary Cope: The Treatment of Irreducible Sigmoido-rectal Intussusception in Old People. Mr. W. B. Gabriel: Five Cases of Small Gut Obstruction Round Colostomies. (Each paper will be followed by discussion.) Demonstration: Dr. P. H. Manson-Bahr: A Demonstration of Sigmoidoscopic Appearances of Dysenteries of Tropical Origin.

THURSDAY.—8.30 P.M., OPHTHALMOLOGY, NEUROLOGY. Special Discussion on Ocular Complications of Encephalitis Lethargica. Speakers: Dr. James Collier (Neurology). Mr. F. A. Williamson-Noble (Ophthalmology). The following will also take part in the discussion: Dr. A. Feiling, Dr. J. R. Perdrau, Mr. M. L. Hine, Mr. R. Foster Moore, Dr. W. J. Adie. Cases (at 8 P.M.): Mr. A. H. Levy: Spasm of the Orbicularis, an Early Symptom in Encephalitis Lethargica.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 5 P.M.) Cases: Dr. Bernard Myers: Two Cases of Essential Thrombocytopenic Purpura Hæmorrhagica Two Years after Splenectomy. Dr. George Rossdale: An Unusual Type of Pericarditis Associated with Rheumatic Heart Disease. Other cases will be shown.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

FRIDAY, Feb. 10th.—5 P.M., at 11, Chandos-street, Cavendish-square, W. Dr. A. A. Mumford: School Medical Officer of the Future. (Tea 4.30 P.M.)

BIOCHEMICAL SOCIETY.

MONDAY, Feb. 6th.—5 P.M., at the Lister Institute, Chelsea Bridge-road, S.W. Communications: H. Jephcott and A. L. Bacharach: The Quantitative Estimation of Vitamin D. A. L. Bacharach and E. Allchorne: The Vitamin B Content of Malt Extract. M. G. White and J. J. Willaman: The Alcoholic Fermentation of Pentoses by Fusarium Lini. A. V. Hill: Increased Anaerobic Metabolism in Muscle following Stimulation. D. Jordan Lloyd and W. B. Pleass: The Effect of Nitrates on the Absorption of Water by Gelatin. H. W. Kinnersley, R. A. Peters, and V. Reader: Metabolic Constancy in the Pigeon. R. T. Brain and H. D. Kay: Phosphate Excretion. R. P. Cook and B. Woolf: The Deamination and Synthesis of l-aspartic Acid by Bacteria. R. Robinson and K. M. Soames: Calcification in Vitro.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 6th, to SATURDAY, Feb. 11th.—FELLOWSHIP OF MEDICINE LECTURE at the Medical Society of London, 11, Chandos-st., Cavendish-sq. Mon., Dr. R. M. Stewart: Secondary Forms of Mental Deficiency, at 5 P.M.—PADDINGTON GREEN CHILDREN'S HOSPITAL, W. Clinical demonstration at 2 to 3 P.M., by Dr. G. A. Sutherland, on Fri.—ST. MARK'S HOSPITAL, City-road, E.C. Clinical demonstration by Mr. J. P. Lockhart-Mummery, on Mon., at 2.30 P.M.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Fri., at 5 P.M., Clinical demonstration, Mr. C. L. Gimblett: Cataract. The above lecture and demonstrations are open to members of the medical profession, without fee.—PADDINGTON GREEN CHILDREN'S HOSPITAL AND VICTORIA HOSPITAL FOR CHILDREN. Combined course in Diseases of Children. Mornings and afternoons. Lectures, demonstrations, and operations.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square. Course in Dermatology, every afternoon. Pathology course arranged.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Tues. and Sat. mornings. Clinical demonstration in Psychological Medicine.—THE NATIONAL HOSPITAL, Queen-square, W.C. Course in Neurology. Every afternoon. Demonstrations. Lectures at certain times.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.

MONDAY, Feb. 6th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department.

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department. 2 P.M., Dr. Shaw: Medical Out-patients.

SATURDAY.—10 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Owen: Medical Diseases of Children.

Medical and Surgical Out-patients, Operations, Special Departments, daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, Feb. 6th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On TUESDAY, Feb. 7th, and THURSDAY, Feb. 9th, at 2 P.M., there will also be Special Demonstrations of Ear, Nose and Throat Cases and Medical Cases by Mr. W. Ibbotson and Dr. A. J. Whiting respectively.

NATIONAL HOSPITAL, Queen-square, Bloomsbury.

MONDAY, Feb. 6th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Mr. Paton: Papilœdema (2).

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Principles Underlying the Diagnosis of Spinal Tumours (2).

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Neurosyphilis (2).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Methods.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 9th.—4 P.M., Mr. O. L. Addison: Cystoscopy.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 7th.—3.15 P.M., Dr. A. Whitfield: Lichen Planus, Varieties and Treatment.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
WEDNESDAY, Feb. 8th.—4 P.M., Consultations and Demonstrations.
FRIDAY,—4 P.M., Dr. Dan MacKenzie: Early Mastoid Operations.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Feb. 8th.—4.30 P.M., Mr. R. H. Jocelyn-Swan: Enlarged Prostate.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Feb. 8th.—4.30 P.M., Dr. W. N. East: Some Problems of Forensic Psychiatry.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 7th.—5 P.M., Dr. Graham Little: Lichen Planus.
THURSDAY.—5 P.M., Dr. J. E. M. Wigley: Lupus Erythematosus.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.
WEDNESDAY, Feb. 8th.—4.30 P.M., Dr. Norman H. Hill: Clinical Meeting.

PEOPLE'S LEAGUE OF HEALTH.
WEDNESDAY, Feb. 8th.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. R. D. Gillespie: Habit and Adaptation.

ST. MARY'S HOSPITALS, MANCHESTER (Post-Graduate Lecture).
FRIDAY, Feb. 10th.—4.30 P.M. (at the Whitworth-street West Branch), Dr. Bride: Obstetric Operations.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Feb. 10th.—3.30 P.M., Dr. Yates: Clinical Cases.

Appointments.

BUTCHER, W. H., M.D. Oxf., D.P.H., has been appointed Medical Officer of Health, Godstone R.D.C.

CLARKE, EILEEN M., M.B., B.S. Lond., Medical Officer to the Nottingham Board of Guardians.

EDDISON, H. W., M.B., B.Chir. Camb., Medical Superintendent of Wonford House Mental Hospital, Exeter.

GLEGG, R. A., M.D. Edin., D.P.H., County Medical Officer of Health for East Sussex.

JONES, A. M., M.D., F.R.C.S. Edin., Honorary Surgeon to the Ear, Nose and Throat Department of Cardiff Royal Infirmary.

MACLEAN, J. ALLAN, M.B., Ch.B. Glasg., Assistant Surgeon, Dewsbury and District General Infirmary.

MANSON, M., M.D., Ch.B. Glasg., D.P.H., Medical Officer of Health and School Medical Officer, Wood Green U.D.C.

MARSHALL, C. M., M.B., Ch.B. New Zealand, Resident Medical Officer to the Freemasons' Hospital and Nursing Home, Fulham-road, S.W.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road, N.W.—Hon. Consulting Phys. and Hon. Surg. Reg.

Bedford County Hospital.—Asst. H.S. At rate of £130.

Bolingbroke Hospital, Wandsworth Common S.W.—H.S. At rate of £120.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Bristol General Hospital.—H.P., H.S., and Res. Obstet. O., &c. Each at rate of £80.

Cardiff Royal Infirmary.—Hon. Asst. Surg. to Ear, Nose, and Throat Department.

Carlisle, Cumberland Infirmary.—R.M.O. At rate of £155. Also Jun. H.S. At rate of £135.

City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.

Croydon, Children's Medical Home, Waddon.—Visiting M.O. (V.D.). £150.

Croydon County Borough.—Deputy M.O.H., &c. £780.

Derbyshire County Council.—M.O. £600.

East African Medical Service.—Sanitation Officer. £600.

East Suffolk and Ipswich Hospital.—Cas. O. (Male). £150.

Edinburgh Royal Infirmary, Ophth. Dept.—Sen. Clin. Asst. £145.

Exeter, Royal Devon and Exeter Hospital.—Res. Cas. O. At rate of £100.

George Town Municipality, Penang, Straits Settlements.—Deputy Municipal Health O. $7200.

Great Yarmouth General Hospital.—H.S. £150.

Guildford Union Institution, Warren-road.—Res. Asst. M.O.

Hertford County Hospital.—Hon. Asst. S.

Hong-Kong Government.—Radiologist Electrologist. £740.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Hon. Asst. P.

Ipswich, Heathfield Infirmary, &c.—Asst. Res. M.O. £250.

Leicester Royal Infirmary.—Hon. P. and Asst. Hon. P. Asst. Pathologist. £500.

Lewisham, Metropolitan Borough of.—Asst. M.O.H., &c. £650.

Liverpool, Hospital for Consumption and Diseases of Chest.—Asst. M.O., &c. £150.

London School of Hygiene and Tropical Medicine, 23, Endsleigh-gardens, W.C.—University Chair of Biochemistry. £1300. Also Research Studentship in Protozoology. £250.

Manchester and Salford Hospital for Skin Diseases.—H.S. £100.

Middlesbrough County Borough.—Asst. to M.O.H. £450.

Ministry of Health, Whitehall, S.W.—M.O. £600.

Omdurman, C.M.S. Hospital.—Doctor required.

Preston County Borough.—Asst. S.M.O. £600.

Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200. Also Cas. O. At rate of £100.

Rochester, St. Bartholomew's Hospital.—H.P. At rate of £175.

Royal Free Hospital School of Medicine for Women.—University Chair of Pathology. £1000.

Royal Free Hospital and London School of Medicine for Women, Obstet. and Gynæcol. Unit.—Anæsthetist. £100.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.

Royal National Orthopædic Hospital (Country Branch), Stanmore, Middlesex.—H.S. At rate of £150.

Royal Naval Dental Service.—Five Dental Surgeons.

Royal Northern Hospital, Holloway, N.—Ophth. Surg.

St. John's Hospital, Lewisham, S.E.—Asst. P.

St. Thomas's Hospital.—Phys. in charge of Out-patients.

Sleaford, Kesteven Mental Hospital.—Asst. M.O. £350.

Smethwick County Borough.—Asst. M.O.H., &c. £600.

Stoke-on-Trent, City of.—M.O. of Venereal Diseases Centre. £850.

Truro, Royal Cornwall Infirmary.—H.S. £170.

University College Hospital Medical School.—Radcliffe Crocker Travelling Scholarship in Dermatology. £280.

Warwick County Mental Hospital, Hatton.—Asst. M.O. £300.

West London Hospital, Hammersmith-road, W.—Hon. Obstet. Reg.

West Riding County Council.—School Oculist. £600.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Lochaber District (Sheriffdom of Inverness, Elgin, and Nairn). Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than Feb. 15th.

Births, Marriages, and Deaths.

BIRTHS.

BREWERTON.—On Jan. 24th, at Harley-street, W., the wife of Elmore Wright Brewerton, F.R.C.S., of a son.

YEOMAN.—On Jan. 25th, at White Croft, Fetcham Park, Leatherhead, the wife of J. Clark Yeoman, L.D.S., of a son.

MARRIAGES.

CAMPBELL—STANSFIELD.—On Jan. 25th, at the Parish Church, East Hoathly, by the Rector, the Rev. J. F. Groves, M.A., Angus Henry Campbell, M.B., Ch.B. Edin., B.Sc., D.P.H., only son of the late Alexander Campbell and of Mrs. W. M. Campbell, of Edinburgh, to Helen Lucy, younger daughter of Mr. and Mrs. J. E. Stansfield, of Caburn, Halland, Sussex.

FINLAYSON—LAWSON.—On Jan. 25th, 1928, at the Cathedral Calcutta, John Taylor Finlayson, elder son of the late J. H. Finlayson and of Mrs. Finlayson, of Kingswood, Surrey, to Miriam Lawson, M.R.C.S., L.R.C.P., only daughter of the late Dr. H. A. Lawson and of Mrs. E. Lawson, of Celci, Epping.

MOSS—EDGE.—On Jan. 26th, at St. Gregory's Church, Cheltenham, Dr. Leslie Newell Moss, of Ipswich, to Hilda Mary Cécile, elder daughter of R. C. Edge, late P.W.D., India, and Mrs. Edge.

DEATHS.

BRAMWELL.—On Jan. 19th, of pneumonia, Hugh Ransom Bramwell, M.B., in his 66th year.

MILLIGAN.—On Jan. 25th, at Cheyne-walk, Northampton, Robert Arthur Milligan, M.D., M.R.C.S., L.R.C.P., aged 69 years.

WEBSTER.—On Jan. 26th, at Inverkip, Ryde, I.O.W., Lieut.-Colonel C. G. Webster, F.R.C.S. Edin., I.M.S. (retired), aged 56.

WILSON.—On Jan. 12th, at Rollestone, Southbourne, Bournemouth, R. O. Murray Wilson, M.R.C.S. Eng., L.R.C.P. Lond.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET,"
VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

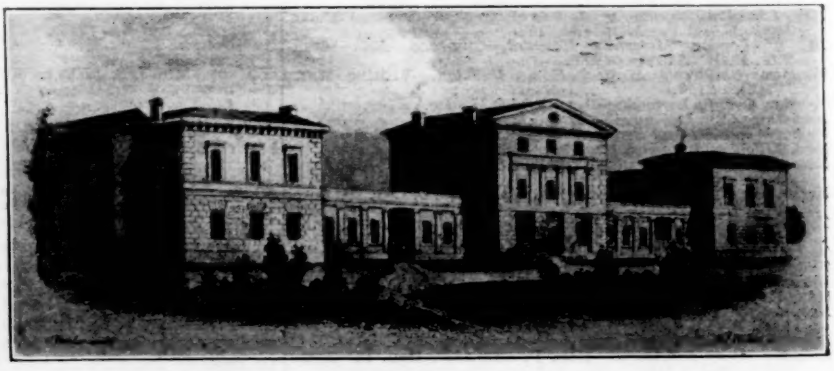
Notes, Comments, and Abstracts.

VILLEMIN AND THE ELIMINATION OF TUBERCLE.

Jean-Antoine Villemin, professor in the Army Medical School of Val-de-Grâce, was the first to prove (in 1860–61) that tubercle was spread by infection, and to propose reasoned measures for its prevention. The centenary of his birth was celebrated in Paris last October, as our correspondent then noted (THE LANCET, 1927, ii., 1257), and a fuller account is now given in the *Archives de Médicine et de Pharmacie Militaires*. Among the guests were Sir Matthew Fell and Major Voncken, President and Secretary respectively of the Committee of the International Association of Military Surgeons, whose fifth congress will take place in London next year, under General Fell's presidency. Prof. A. Calmette, who presided over the scientific meeting at the Val-de-Grâce, said that, as a recent example of Villemin's teaching, over 48,000 French children had been rendered immune to tuberculosis by B.C.G. vaccine, given by the mouth in the first fortnight of life, during which the intestines are permeable to the bacilli. Similar protection was now being given subcutaneously to older children, and he called attention to the experiment of inoculating 200 nurses in training at Oslo for tuberculosis work. Dr. Rousseau, of the Medical Service of the Colonial Army, said that in Indo-China 20,000 infants had been inoculated with B.C.G., and over 800 in Senegal. Dr. Grosfillez, of the same Service, said that in 1923 the phthisis death-rate of "native" troops employed in France was, for Senegalese, 14 per 1000; for Malagasy, 6·6; for men from Indo-China, 10. Active measures were taken, and half of the detachments of 1925 were protected by B.C.G.; this year the inoculation will be repeated for the Senegalese, and the results minutely examined. Figures are not available, but the results so far are considered encouraging. For the prevention of tuberculosis in the Navy, a matter which is giving the authorities some concern, Surgeon-Captain Gazamian proposed that no one should be allowed on board with open tuberculosis, while doubtful cases should be carefully watched, and, if necessary, eliminated. Some people, he said, laugh at such proposals—"the Navy is not a pre-tuberculous colony"—but to neglect them costs the public dear. Men who work within the armour should sleep in the open air, at any rate in peace-time, although (be it noted) the paymaster's staff and the telegraphists who live high up have more tubercle than the engine-room staff in the depths. Food and clothing are now good on French ships, personal cleanliness is easy, and antituberculous propaganda assiduously pushed in films, lectures, tracts, and by games. Fonssagrives, the great French naval hygienist of 1860, said that disaster came to the ship whose men did not sing. The incidence of phthisis had dropped from 12·5 per 1000 in 1900 to 5 in 1920–26, but still compared unfavourably with 2·7 (2·24 in 1924) in the English, and 2·85 in the United States Navy.

THE LONDON FEVER HOSPITAL.

THE death of Sir Mackenzie Chalmers, recently noted in our columns (Jan. 21st, p. 142), was a reminder of the London Fever Hospital as it is, for it was largely owing to his untiring effort that the hospital has developed to its present level of equipment and efficiency. Dr. Hugh Kerr kindly sends us a ticket, now in his possession, for a dinner held in 1850 in aid of the hospital as it then was. One side of the ticket gives the view of the buildings which we here reproduce, whilst the other states that a public dinner for the benefit of the London Fever Hospital (Patron, H.R.H. Prince Albert) will take place at the Freemasons' Tavern on Tuesday, May 14th, 1850, the Right Hon. the Earl of Devon, President, in the chair. The stewards were to be His Grace the Duke of Buccleuch, the Earl of Carlisle, Lord Robert Grosvenor, Lord Ashley, the Master of the Temple, W. A. Anderson, Esq., J. A. Bostock, Esq., Dr. Bushnan, R. H. Coote, Esq., Thomas Corney, Esq., Dr. C. J. Cox, the Rev. Dr. Cumming, Richard Davis, Esq., W. T. Dyer, Esq., W. Everett, Esq., Henry Hyde, Esq., Dr. Jones, Dr. Jenner, Wm. Lawrence, Esq., J. L. Mallett, Esq., Dr. Roget, the Rev. Edward Scobell, Dr. Southwood Smith, Samuel Turner, Esq., Henry Wakefield, Esq., John Ashton Yates, Esq., and James Yates, Esq. The ticket, whose price was one guinea, is signed by the secretary, Charles Hyde, of 33, Ely-place; it bears the number 329, and concludes with a statement that dinner will be on the table at half-past 5 o'clock.



The London Fever Hospital, Liverpool-road, Islington, as it was in 1850.

LETTERS TO YOUNG DOG OWNERS.

Major A. J. Dawson's book (London: Philip Allan and Co., Ltd. 1927. Pp. 157. 6s.) is a collection of essays on dogs and dog management, and is illustrated by eight excellent photographs. It is written in a persuasive and conversational way, and he has succeeded in preventing the instruction from appearing didactic. The book deals thoroughly with the choice of a new dog, with its installation, feeding, and housing, with showing, breeding, and canine societies, and can be strongly recommended, especially to those who are becoming owners of dogs for the first time.

NEW PREPARATIONS.

FROM the firm of Hans Potratz, Hamburg, we have received specimens of *Introcid* in bottle and capsule form and of *Dextrocid*. The claims of this iodine cerium preparation and its derivatives to be useful in sepsis associated with the puerperal state, in malignant disease, and in other serious conditions are voluminously supported by quotations from the German medical press, favourable results emanating in particular from the gynæcological wards of the Rudolf Virchow Hospital in Berlin. A paper in the *Veterinary Record* suggests that introcid has been found useful in distemper, and from other communications it appears that detailed information can be obtained from the Institute for Cancer Research in Berlin.

"Wellcome" Brand Schultz-Charlton Test Solution.—The serum of a patient taken about ten days after defervescence from scarlet fever will, in virtue of its antitoxic content, when injected intradermically into the rash of other scarlet fever patients, produce a characteristic blanching of the rash at the site of injection. This Schultz-Charlton reaction is a valuable aid in the diagnosis of "doubtful scarlet fever." It is usually carried out with scarlet fever antitoxin made in the horse. Such antitoxin is available in this solution. Ordinarily 0·2 c.cm. of a 1 in 10 or a 1 in 4 dilution with normal saline solution is injected intradermically into the skin of the chest, abdomen, or forearm, where a uniform scarlet fever rash not more than 70 hours old is available. A blanching from 10 to 40 mm. in diameter makes its appearance in from four to ten hours, and persists from 12 to 72 hours. A positive blanching result, so far as is known, justifies a definite diagnosis of scarlet fever. The solution is issued by Burroughs Wellcome and Co. from their physiological research laboratory in phials containing 1 c.cm. and 5 c.cm.

Cerevisiæ Compound.—This preparation, put up in tablet form, is supplied by Messrs. Barnold, Ltd., Milverton-street, Kennington, London. It is a compound of yeast and glycerophosphates, and experimentation on mice and rats supports the manufacturer's opinion that restoration of vigour and weight after wasting conditions and under-nourishment should be obtained. The formula is cer. visiæ med. sicc. grs. iv., calcii potass. et sodii glycerophos. gr. i., and the dose is one or two tablets three times daily to be taken under medical supervision.